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Orma Livelihoods in Tana River District, Kenya: A Study of Constraints, Adaptation and Innovation

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Declaration

I James Pattison hereby certify that the work contained in this thesis is all my own. The work presented has not been submitted for any other degree or professional qualification.

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Despite the deluge of words awaiting the reader beyond these acknowledgements, the author can't help but feel he has left out so much more than has been included. I consider the experience a profound privilege as well as one of the biggest challenges of my life. Final thanks go to the reader for engaging with the product of these last four years of toil.

Abstract

This study focuses on the constraints, adaptations and innovations in the livelihoods of Orma pastoralists. The fieldwork took place with families around Tiltila, Waldena and Kalalani over a period of 9 months in 2007/08. The position of pastoralist peoples in East Africa is characterised by social, political and economic marginalisation, weak land tenure, and declining per capita livestock holdings, while their shrinking grazing lands are widely regarded to be on the front line of climate change, both in terms of climate impacts and biofuel/agribusiness land pressure. The dearth of good quality data on pastoralist populations and livelihoods is widely cited as one of the fundamental barriers to improving the effectiveness of development support in the drylands. This study seeks to address these knowledge gaps for Orma pastoralists, while contributing to the body of theory on pastoralist livelihood dynamics. Data on the effects of wealth, education and food aid on household mobility were analysed using a theory of asset threshold dynamics. An adapted typology of livelihood strategies was developed to interpret and structure the data. Using child mortality as a proxy for respondent health, the impacts of wealth and mobility status on families' health were explored. In the context of an almost total lack of data on community redistribution of food aid, both for the Orma and for East African pastoralists more generally, the study provides empirical data on *de facto* community food aid allocation patterns. The study also examines a controversial large-scale expropriation of land in Tana River (subsidised under the Kyoto Protocol's Clean Development Mechanism) which will undermine the capacity of Orma pastoralists and other minority groups, to adapt to increased and more extreme environmental variability. In an environment in which enrolment in formal education is very low (particularly for girls), the study found that community nursery schools represent a relatively recent (and thus far undocumented) innovation organised and funded by groups of parents. The data demonstrates unprecedented levels of female enrolment despite cost constraints faced by least wealthy families. It is therefore suggested that incorporation of the community nursery model into the basic literacy element of the proposed national distance learning strategy, offers significant potential for addressing 'Education For All' in Kenya's drylands.

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Abbreviations

ABE- Alternative Basic Education
ABEC- Alternative Basic Education Center
ACPO- Accion Cultural Popular Columbia
AfDB- African Development Bank
ALRMP- Arid Lands Resource Management Project
ASALs- Arid and Semi-Arid Lands
CBTD- Community-Based Targeting and Distribution
CCD- Convention to Combat Desertification
CEMIRIDE- Centre for Minority Rights Development
COF- Climate Outlook Forum
COMESA- Common Market for East and West Africa
COP- Conference of Parties
CRS- Catholic Relief Services
CSA- Council of Scientific Affairs
CSO- Civil Society Organisation
DL- Distance Learning
DSG- District Steering Group
ECOWAS- Economic Community of West African States
EDSAC- Education Sector Adjustment Credit System

EDP- Extended Delivery Point
EFA- Education For All
EFN- Education For Nomads
EIA- Environmental Impact Assessment
EPZA- Export Processing Zones Authority
FAO- The Food and Agriculture Organisation of the United NAtions
FAWE- Forum for African Women Educationalists
FDP- Final Distribution Point
FEWS-Net- Famine Early Warning Systems Network
FFA- Food for Assets
FFE- Forum on Flexible Education
FFW- Food for Work
FGC- Female Genital Cutting
GCM- General Circulation Model
GDP- Gross Domestic Product
GFD- General Food Distribution
GHG- Green House Gas
GMC- General Circulation Model
GoK- Government of Kenya
ICPAC- IGAD Climate Prediction and Applications Centre
IFAD- International Find for Agricultural Development
IFPRI- The International Food Policy Research Institute
IGAD- Intergovernmental Authority on Development
IIED- International Institute for Environment and Development
ILRI- International Livestock Research Institute
IMF- International Monetary Fund
IPCC- Intergovernmental Panel on Climate Change
ITC- International Transhumance Certificate
IUCN- International Union for the Conservation of Nature
KANU- Kenya African National Union
KCPE- Kenyan Certificate of Primary Education
KFSSG- Kenya Food Security Steering Group
KMD- Kenya Meteorological Department
KRC- Kenya Red Cross
KSh- Kenyan Shilling
KWS- Kenya Wildlife Service
LARS- Literacy for Advocacy, Rights and Skills

LGP- Length of Growing Period
MDGs- Millennium Development Goals
MEA- Millennium Ecosystem Assessment
MoE- Ministry of Education
MOEST- Ministry of Education, Science and Technology
MSDNKOAL- Ministry of State for Development of Northern Kenya and Other Arid Lands
NACECE- National Centre for Early Childhood Education
NAPA- National Adaptation Programme of Action
NCNE- National Commission for Nomadic Education
NCONEK- National Commission for Nomadic Education in Kenya
NEMA- National Environment Management Authority
NSNE- National Strategy for Nomadic Education
NGO- Non-Governmental Organisation
ODI- Overseas Development Institute
ODM- Orange Democratic Movement
OL- Open Learning
OOS- Out of School
PARIMA- Pastoralist Risk Management Project
PFE- Pastoral Forum Ethiopia
PLS framework- Pastoral Livelihood Strategy Framework
PNU- Party of National Unity
PPG- Pastoralist Parliamentary Group
PPRS- Pastoralist Poverty Reduction Strategy
PRSP- Poverty Reduction Strategy Paper
RABP- Remote Areas Boarding Programme
ROSP- Report on the State of Pastoralism
SAP- Structural Adjustment Programme
SFP- School-Feeding Programme
SOMDEL Programme- Somalia Distance Education Literacy Programme
SST- Sea Surface Temperature
TARDA- Tana and Athi Rivers Development Authority
TISP- Tana Integrated Sugar Project (TISP)
TSC- Teacher Service Commission
UN- United Nations
UNCCD- United Nations Convention to Combat Desertification
UNEP- United Nations Environment Programme

UNFCCC- United Nations Framework Convention on Climate Change
UNICEF- United Nations International Children's Emergency Fund
USD- United States Dollars
WFP- World Food Programme
WB- World Bank
WISP- World Initiative for Sustainable Pastoralism

Preface

I first became aware of Orma pastoralists due to an encounter with Professor John King in Nairobi in 2007. At that time I was interested in basing my PhD study on the role of indigenous breeds of livestock in the livelihoods of the rural poor. Professor King recounted his astonishment at seeing Orma pastoralists selling milk in Hola at the height of the dry season and I reflected that the Orma's highly adapted cattle could be an ideal focus for my study. Having consulted the district livestock department, I planned a trip to Tiltila to assess the viability of the study. Upon meeting Orma elders, it quickly became apparent that they were more interested in discussing resource competition, public service provision, land rights and a range of issues that seemed to be more relevant to their lives than a narrow study on the Orma cattle breed. Based on this and further initial interviews, I decided to radically alter the focus of the study to reflect the challenges to Orma livelihoods as perceived by the participants themselves.

Until relatively recently pastoralism was widely regarded as an environmentally damaging anachronism upon which 'development' had yet to work its magic. With the failure of the ranching interventions of the 1970s and the paradigm shift in our understanding of ecosystem dynamics in arid areas, 'carrying capacity' and grazing-induced environmental degradation are now acknowledged by specialists to have only peripheral importance in many dryland areas. This has led to a reassessment of pastoralist management strategies, including herd maximisation and mobility. It is now widely accepted that herd maximisation is an effective strategy against severe herd loss in drought, and that mobility is essential in order to maximise production in areas with highly variable rainfall. Despite these theoretical advances, and a number of studies showing pastoral production to be considerably more efficient than ranching, pastoralism has not been subject to significant reappraisal by policy-makers nor has its reputation for environmental degradation been rehabilitated.

In addition to the persistence of popular misconceptions, pastoral livelihoods in East Africa are threatened by a number of factors, many of which are the result of decades of economic and political marginalisation (e.g. lack of investment in infrastructure and public service provision). Others factors such as climate change and biofuel production represent more recent threats. Weak land tenure in pastoral grazing areas, which are regarded as 'wastelands' by many political elites, leaves land vulnerable to large-scale expropriation for national parks and reserves, irrigated agriculture, and biofuel production. The threat of biofuel land expropriation has been heightened by global concern over the depletion of oil reserves and the international drive to mitigate climate change. This thesis discusses a large-scale expropriation of the Orma's most valuable grazing lands which highlights the disjuncture between international policies to address climate change and local impacts. This disjuncture can persist because negative impacts typically manifest at the local level in politically disenfranchised and economically marginalised communities without the capacity to articulate effective resistance.

In response to these diverse challenges, Orma pastoralists, like many other East African pastoralist groups, are adapting and diversifying their livelihoods. In the context of falling per capita livestock holdings and increasingly frequent droughts, many families are settling or reducing their mobility in order to take advantage of static services such as education, healthcare, and relief food. This thesis examines the importance of various forms of mobility to the Orma production system, and how the provision of public services has the capacity to support or constrain Orma livelihoods. There is a focus throughout the thesis on livelihood adaptations and innovations in response to the challenges outlined above. Highlighting successful adaptations and innovations is regarded as an important step in identifying potential focal points for development support. As Orma livelihood strategies and constraints are explored throughout this thesis, a theoretical framework is developed which brings together a typology of pastoral livelihood strategies with a theory of asset threshold dynamics in order to provide a conceptual structure with which to analyse

the data. It is intended that this framework will be of use to development practitioners and researchers as a simple tool with which to communicate ideas and interpret data concerning complex pastoral livelihoods.

As the political landscape in Kenya changes with the approval of the new constitution and the on-going process of government decentralisation, the provision of data concerning Orma utilisation of public services and their role in livelihood strategies can be considered very timely. Particularly in light of the newly afforded opportunities for locally autonomous adaptation of public services under the new institutional structure. Similarly, the creation of the Ministry of State for the Development of Northern Kenya and Other Arid Lands will begin to act as an umbrella for the implementation of a more coordinated and coherent national drylands policy. It can thus be considered an opportune moment for a scholarly contribution to the debate around how best to facilitate and support Kenya's pastoral communities.

Chapter One- Introduction

1.1 Research Outline

This thesis is based on interviews[1] and participant observation with Orma pastoralists around Tiltila, Waldena and Kalalani, over a period of 9 months in 2007/08. The Orma (along with Borana, Somali, Gabra, Rendille and Dasenetch) are Cushites (in the Afro-Asiatic family of languages). The Borana are their closest ethnic and linguistic relatives, and they both form part of the larger Oromo population which extends into southern Ethiopia (Kelly, 1988). The recent national census numbered the Orma at 66,275 (GoK, 2010b). Tana River District remains one of Kenya's least developed districts in terms of poverty indicators, infrastructure and services (IFAD, 1990, 2000; Oxfam, 2009). Rainfall in the district is low, bimodal and erratic, ranging from 300 to 500 mm, which is insufficient to sustain rain-fed agriculture. The district typically experiences large differentials in rainfall between divisions, with the 'hinterland' (Bangale, Bura, Galole[2] and (part of) Garsen divisions) receiving significantly lower and more variable rainfall than the coastal areas (ALRMP.org). The dearth of good quality data on pastoralist populations and livelihoods (Oxfam, 2009; Swift, 2010) is widely cited as one of the fundamental barriers to improving the effectiveness of development support in the drylands. This

[1] These 144 interviews generated over 70,000 words of interview transcription.

[2] The study area was predominantly in Galole Division but also straddled the boundary with Kitui District.

study seeks to address these knowledge gaps for Orma pastoralists, while contributing to the body of theory on pastoralist livelihood dynamics.

A major focus of this thesis is the role of both household and herd mobility in the livelihoods of Orma pastoralists living in Tana River District. The constraints, adaptations and innovations which impact on a family's ability to maintain mobility while accessing key public services will be examined with reference to the empirical data. Orma livelihood strategies are changing in response to a variety of factors which constrain their ability to rebuild their herds. Access to these services is becoming increasingly important as the Orma seek to diversify their livelihoods in the context of falling per capita herd sizes and declining access to productive resources. This thesis looks at the role of education and food aid and a range of other services both in constraining and supporting household mobility and livelihoods in a context of increasingly extreme environmental variability (Mortimore *et al.* 2009). The remainder of this chapter situates the livelihoods of Orma pastoralists in the broader context of the world's drylands, the challenges faced by pastoralist communities who inhabit them, and the central concepts necessary to justify support for pastoralist livelihoods. The chapter concludes with an outline of the thesis structure.

1.2 The Drylands and Pastoralism

Over a billion people (34.7 percent of the global population) now live in the world's hyper-arid, arid, semi-arid, and dry subhumid lands (MEA, 2005). These areas, which cover over 40 percent of the world's land surface, are referred to in this thesis as 'the drylands'. Extensive pastoralism occurs on roughly 25 percent of the global land area, more than any other production system (Asner *et al.* 2004). In sub-Saharan Africa, 25 million pastoralists and 240 million agropastoralists depend on livestock as their primary source of income (IFPRI & ILRI, 2000). Figure 1.1 illustrates the distribution of the world's drylands.

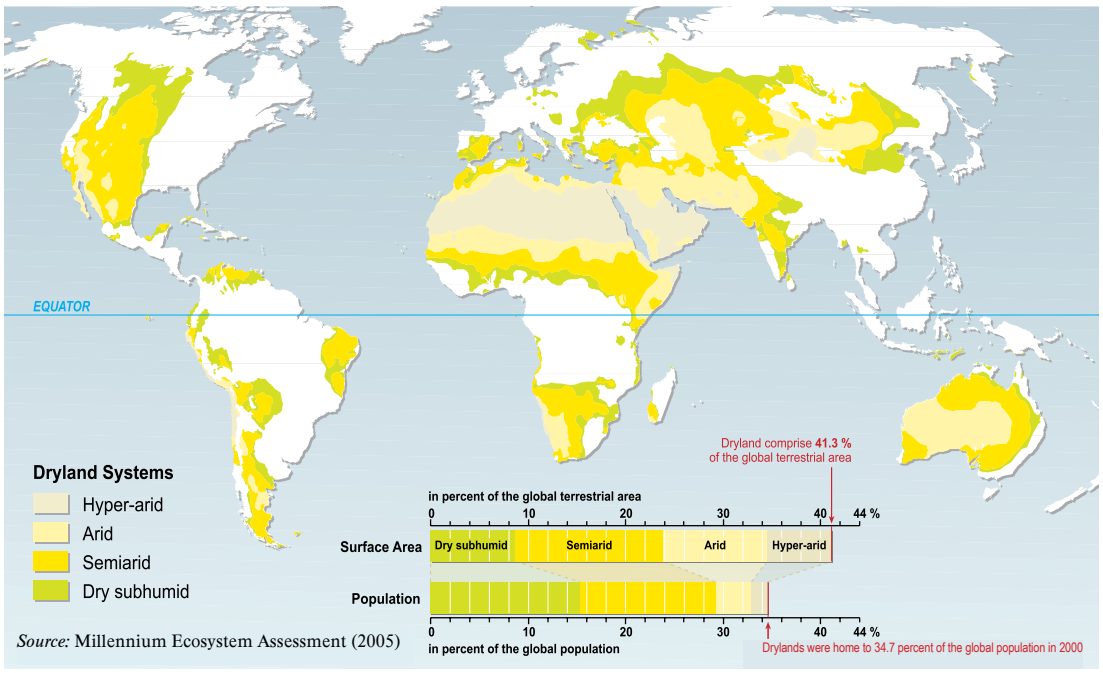

Figure 1.1 Distribution of the world's drylands according to aridity zones (MEA, 2005)

The importance of the drylands resides not only in their physical extent but also from their contributions to livelihoods, national wealth, and global economic and environmental processes. Pastoralists keep 35 percent of the world's sheep, 23 percent of the goats, and 16 percent of the cattle and water buffalo, much of which is consumed in higher potential areas (Gill, 1999). Indeed, the bulk of the meat, milk and other livestock products consumed in the East Africa come from pastoral areas in the drylands. Yet, dryland communities are some of the most food insecure groups in Africa (MEA, 2005; Little *et al.* 2001; Oxfam, 2005). The Millennium Ecosystem Assessment (2005 p.47) reported that most dryland populations "lag far behind the rest of the world in terms of human well-being and development indicators". Dryland populations are also among the most socially, economically and politically marginalised groups of any group in Africa (Khagram *et al.* 2003), with some of the most poorly provisioned infrastructures and public services (Oxfam, 2009).

1.3 Economics and Investment in Kenyan Drylands

In 1994, absolute poverty in Kenya's drylands was estimated to be 64 percent. It had increased to 74 percent in 2006, despite the Kenyan economy experiencing strong

growth during that period (GoK, 2008). It is estimated that in Kenya, pastoralism contributes 67 percent of the nation's red meat (EPZA, 2005). The drylands provide an average of 20 to 30 percent of GDP in the Horn of Africa, with substantial sub-regional trade (Little, 1996). Generally, pastoralists receive only a small portion of the terminal market price for livestock due to poor market integration, which is exacerbated by inadequate transport and communication infrastructures (Swallow, 1994). This severely constrains the power of the market to stimulate economic growth and development in the drylands. The considerable contribution of pastoralism to national economies is not adequately recognised by governments due to lack of data (Hesse & MacGregor, 2006) and the informal nature of the pastoral economy (Letara, 2006). In many institutional settings, pastoralism is still viewed as inefficient and environmentally damaging. The effects of these misconceptions are exacerbated by the lack of representation of minority groups in government structures. This is reflected by continued low levels of public and private investment (Watkins & Mwangi, 2009).

1.4 Dryland Ecology and Pastoral Mobility

Scarce and unreliable rainfall is the defining climatic feature of East African drylands. High rainfall variability, both between and within years, represents the single most important factor in determining the abundance and quality of natural pastures (Hesse & MacGregor, 2006). Pastoralism is typically the dominant livelihood system below about 400 mm mean annual rainfall (Anderson *et al.* 2003). High temperatures lead to evaporation of a large proportion of rainfall which further reduces soil moisture available to plants. Intense downpours combined with sun-baked soil crusts result in a high level of water run-off which means that a significant proportion of rainfall is not available for plant growth (Anderson *et al.* 2009).

Since the early 1990s a new consensus has been emerging concerning the type of ecosystem dynamics that predominate in the drylands. There is now a broad acceptance that in highly variable arid environments, ecosystems are characterised

by non-equilibrium dynamics rather than Clementian succession or multi-equilibrial models (Sanford, 1982; Ellis & Swift, 1988; Westoby *et al.* 1989; Behnke *et al.* 1993; Ellis, 1994; Scoones, 1995). This paradigm shift has important implications both for the interpretation of pastoral livelihood strategies, and for drylands development policy. Drylands development interventions have tended to support sedentarisation, land privatisation, and production intensification (which has been associated with the largely unsuccessful 'ranching model' (Anderson & Broch-Due, 1999). Understanding pastoral mobility in terms of pastoralists' active and skilful targeting of transient grazing patches (of peak nutrient content and digestibility) has led to a reassessment of the role of mobility in the livelihoods of pastoral communities (Krätli, 2008). Pastoralists harness environmental variability to enhance productivity and reduce risk. It is this highly skilful management strategy which explains the vastly superior production of pastoralist systems in comparison to alternative livestock production systems in Africa's drylands, for Kenya, (*cf.* Western, 1982); for Ethiopia, (*cf.* Cossins, 1985); for Botswana (*cf.* De Ridder & Wagenar, 1984), and for Zimbabwe (*cf.* Barnett, 1992).

1.5 Mobility and Land Access

Over the last few centuries, the expansion of farming and settlement has pushed pastoralists, hunters and wildlife out of the most productive grazing lands (Reid *et al.* 2007). Roughly 35-50 percent of the wetter (semi-arid and dry sub-humid) areas of former grazing lands are now ploughed for irrigated and rainfed crops (MEA, 2005; Kloos 1982; Tadesse & Peden 2005; Mwangi 2006). Over 10 percent of East Africa's land area is protected within national parks, game reserves, and other conservation areas, many of which are former pastoralist grazing lands (Reid *et al.* 2004). Key resource areas create an ecological 'safety net' for herders and animals particularly during drought (Illius & O'Connor 1999). Inability to access these areas can jeopardise the survival of pastoralist herds in severe drought years (Little, 2003). Many grazing lands used by pastoralists are highly productive in terms of biomass, and a rich source of biodiversity (Behnke, 2007). They also provide a range of

ecosystem services which benefit local people as well as benefiting humankind generally (grasslands have the potential to store more carbon below ground than any other ecosystem (IPCC, 2000). The area known to the Orma as *chaffa* (in and around the Tana Delta) forms a key resource area for Orma pastoralists and other marginalised groups. The controversial expropriation of 40,000 hectares of *chaffa* has been subject to a legal challenge by local communities (coordinated and financed by national and international NGOs).

1.6 Thesis Structure

The thesis is structured as follows. Chapter Two extends the characterisation of both Africa's drylands and East African pastoralism, including a critical examination of data concerning pastoral populations and pastoral poverty. The chapter goes on to analyse the contribution of pastoralism to national and regional economies. The ecological basis for pastoralist production strategies and the evidence for their comparative advantage is then discussed with reference to the role of pastoral mobility. Finally, the chapter outlines the international institutional response to climate change which foreshadows a more thorough examination of the impact of climate change on dryland communities in Chapter Seven.

Chapter Three sets out to contextualise the study and to describe the methodological approach, including an exposition of methods utilised and challenges encountered in the field. The chapter also describes the main features of the Orma production system, the management of natural resources, and some of the cultural practises of relevance to the study data. An examination of the historical context of Tana River District is used to develop an understanding of state and urban dwellers' perceptions of Orma pastoralists. The chapter goes on to highlight the role these perceptions have played in shaping development policy in Tana River District. Data concerning the comparative lack of investment in infrastructure and services in Tana River and other pastoralist districts is presented in order to characterise the marginalisation of pastoralists in Kenya.

Chapter Four extends the analysis of the ecological and productive basis for household and herd mobility, while also describing other Orma management strategies. The motivations for various forms of mobility are discussed, while factors motivating a reduction in mobility or permanent settlement are also examined. A theory of threshold dynamics is developed, which is used to structure and interpret the data. The chapter goes on to explore the role of service provision (with the exception of education which is dealt with separately in Chapters Five and Six) and infrastructure in constraining or facilitating Orma livelihoods. Constraints range from direct effects such as the restriction of mobility, to indirect effects which compromise the human and productive capital available to the system (e.g. through inaccessible or poor quality health and veterinary services). The importance of transportation and communication infrastructure in facilitating equitable engagement with the market and attracting private investment is discussed. Finally, data on *de facto* community food aid allocation is used to critically assess the role of the World Food Programme in the district, and how recent policy shifts are likely to impact on Orma pastoralists in the study area.

Chapters Five and Six address the issue of education, learning and knowledge among Orma communities. The volume of data and respondent testimony concerning the increasing importance of education to Orma livelihoods, resulted in more thematic weight being given to the issue during data collection and in the analysis and interpretation of the data. This reflects the overall methodological approach of the study whereby focal points were defined based primarily on livelihood constraints of most relevance to local people.

Chapter Five reviews the background material on education provision to marginalised groups. It then goes on to describe the poor state of education provision in the drylands and the lack of reliable data both for Tana River District and more generally in East Africa. Kenyan education policy is outlined from a historical

perspective, building on insights from Chapter Three. The strengths and weaknesses of alternative provision modalities for marginalised communities are then discussed with reference to pastoralist livelihoods. The chapter goes on to examine changing Orma perceptions of education and the influence this has on their decision to enrol their children. Lastly, issues surrounding educational 'rights' and internationally agreed objectives such as Education For All and the Millennium Development Goals are discussed with reference to the contextual realities of pastoralist livelihoods.

Chapter Six discusses the data on Orma primary school enrolment and its correlation with family wealth and mobility status. The direct and indirect costs associated with enrolment of children in primary school are discussed in light of parental perceptions, both of the value of education and of the child's future opportunities. The analysis of data focuses on the enrolment decision-making process in order to identify key constraints, particularly for girls, for whom educational participation is of particular concern. This analysis is structured using the 'Pastoral Livelihood Strategy (PLS) Framework' which is based on theoretical insights from Chapter Four (concerning the role of asset threshold dynamics in defining livelihood strategies) and integrates a simple livelihood strategy typology. Finally, the proposed Kenyan national distance learning strategy is assessed with reference to the study data. Based on community educational innovations, recommendations are put forward for strengthening the basic literacy element of the strategy. The broader utility of the PLS framework for drylands development is also explored.

Chapter Seven outlines the proposed expropriation of land in Tana River District, and reviews the background literature on biofuel 'land grabs' and pastoralist resource competition and conflict. The chapter then describes the 'paradox of pastoral land tenure' (Fernández-Giménez, 2002) and reflects on a range of innovations to facilitate pastoral mobility across Africa. The role of civil society in pushing pastoralist issues up national agendas is examined in light of recent positive institutional and policy developments in Kenya. The chapter then returns to the

impacts of climate change on pastoralist communities by reviewing the potential for downscale climate projections to direct external support for adaptation initiatives. The assessment of green house gas emissions from various land-use systems is critically evaluated, including the role of carbon markets in subsidising the production of 'green energy' overseas. The chapter concludes by contrasting global climate mitigation strategies with local impacts, and argues for a more holistic assessment of the impacts of land expropriation. Chapter Eight recaps the key empirical data and theoretical contributions presented in the thesis. Potential focal points for external support and promising areas for further research are also identified based on the study data.

The thesis structure described above seeks to guide the reader through all the key concepts, secondary literature, empirical data, and historical context, necessary to gain some insight into the constraints, adaptations, and innovations in the livelihoods of Orma pastoralists. In many ways, the structure of this thesis artificially separates aspects of Orma livelihoods which, in reality, are all intimately inter-related. For this reason, some of the same themes recur in multiple chapters. These reiterations are considered necessary in order to reflect the different ways in which pervasive themes like mobility, land access and climate change influence the lives of the Orma.

Chapter Two- Study Background

2.1 East African Pastoralism

The World Initiative for Sustainable Pastoralism (WISP) (Nori & Davies 2007 p.7) defines pastoralism as:

> *"The finely-honed symbiotic relationship between local ecology, domesticated livestock and people in resource-scarce, climatically marginal and highly variable conditions. It represents a complex form of natural resource management, involving a continuous ecological balance between pastures, livestock and people."*

The idea of symbiosis refers to the mutual benefit that each of the three components: local ecology, domesticated livestock, and people, receive from each of the other components. People and livestock benefit from the local ecology as a source of food, water, materials and services. Livestock are given water from wells dug by people as well as defense against predators. Livestock provide humans with food and materials (hides and wool). The local ecology benefits from: hoof action which breaks up the soil crust for seed and water infiltration; grazing which prevents bush encroachment; and manure which fertilises the soil. The potentially damaging effects of alternative production systems are also avoided (IIED, 2009). 'Continuous ecological balance' encapsulates the idea that only through careful management can a mutually beneficial balance be sustained. If any one of the components falls out of balance for

a sustained period, all the components will suffer. The definition of pastoralism offered by WISP clearly highlights the sustainability of the livelihood system, breaking with previous discourses around ‘degradation of the range’ and the notion that pastoralists are interested only in maximising their own benefits without regard for the natural resources on which their livelihood is based. Misconceptions of pastoralism and discourses based on ‘degradation’ and ‘desertification’ will be explored later in the chapter. The following section presents an introduction to pastoralism and some of its main characteristics.

Pastoralists occupy savannas, semi-arid, or arid deserts where rainfed agriculture is precarious. They are distinguished from livestock ranchers by their practise of taking herds to pasture and water, rather than having fodder and water in permanent supply or brought to the animals in one area. Pastoralists have typically occupied communally shared land, utilizing kinship ties of marriage and descent for mutual herding and defense (Roth & Fratkin, 2005). Highly variable, unpredictable and often scarce rainfall dictates where, when, and how much vegetation is available for pastoralists’ livestock to graze. Mobility allows pastoralists to track the dramatic fluctuations in feed and water supply as well as avoiding the seasonal prevalence of disease vectors.

East African pastoralist societies are almost exclusively patrilineal and largely patrilocal. Land is held in common (i.e. shared by territorial or kinship groups) whilst livestock is held individually. Men control and own the majority of the livestock and women often have control of the milk and the hides, as well as constructing and transporting mobile houses. Pastoralist livelihoods depend on the raising of domestic animals including cattle, camels, goats, sheep, and donkeys for milk, meat, transport and trade. A pastoral livestock owner’s fundamental goal is to maintain the herd such that it provides sufficient milk, meat, blood and material goods (hides and wool) to sustain the household and provide the basis for trade and exchange. In order to achieve this goal there must be a sufficiently large household labour force to provide

pasture, water and security to the herds (Roth & Fratkin, 2005). East African herders raise more female than male animals to produce milk for both humans and nursing livestock. Male animals are kept for reproduction, transport, meat and trade, and to satisfy social obligations including marriage payments (Blench & Marriage, 1999). There has been significant pressure placed on pastoralists in Kenya by government extension officers, national and international development organisations and NGOs, to shift their production goals from subsistence towards beef production (ALive, 2006a). The legitimacy of such policies will be examined with reference to the impacts of climate change in Chapter Seven.

The basis for pastoralists' focus on milk production is subsistence, often in the absence of well functioning or accessible markets. Ruminant milk production is the most efficient pathway for converting forage to human food (Reid *et al.* 2007; Galvin *et al.* 2004; Spedding, 1971). The strategy of accumulating large herds for subsistence rather than selling beef animals functions as a wealth store in the absence of financial services. Wealth is generally stored through accumulation of large ruminants, which in comparison with small ruminants, are more metabolically efficient users of forage, are more mobile, generally have lower disease risk, and are more 'lumpy' assets, which puts them out of reach for household budget contingencies and requests for loans (IIED & SOS Sahel, 2008; Dorward *et al.* 2001). As well as embodying pastoralists' economic assets, livestock represent social and cultural identity and security. Pastoralist herds are composed mainly of indigenous breeds[3] that have been bred over many generations to fit the production context of the drylands.

Pastoralists employ a number of highly specialised risk spreading strategies to safeguard their herds in the face of unpredictable and sometimes extreme climatic events, disease outbreaks and social unrest (IIED, 2009). Strategies such as: keeping

[3] In Kenya, over 75 percent of the national cattle herd is made up of indigenous breeds traditionally kept by pastoralists, indicating that the bulk of the nation's animal wealth is in dryland areas (IIED, 2008).

diverse species, breeds or types; herd splitting; selective breeding; and loaning livestock, increase the reliability of the production system while building strong social networks (Roe *et al.* 1998). Social capital (Carney, 1998) is particularly important in systems reliant on resource management institutions functioning on consensus (Ensminger, 1992), and social insurance mechanisms based on extended family and kinship networks.

2.1.1 Pastoralist poverty

The Millennium Ecosystem Assessment (2005) reported that on average most dryland populations lag far behind the rest of the world in terms of human well-being and development indicators, and dryland populations suffer from the poorest economic conditions in the world. Dryland populations are also among the most ecologically, socially, and politically marginalised populations on Earth (Khagram *et al.* 2003). Surprisingly, while there has been considerable research in pastoral areas during the past three decades, much of it highlighting poverty as a key issue, systematic analyses of poverty in pastoral areas are limited (exceptions include: Little *et al.* 2008; Heffernan *et al.* 2001; Anderson & Broch-Due, 1999; Waller, 1999; Rutten, 1992; Baxter & Hogg, 1990). Standard poverty indicators are often inappropriate in the pastoral context for a variety of reasons including: extreme seasonal fluctuations in food availability and income; focus on nutrition quantity rather than quality; and undervaluation of social support networks. In the context of pastoralism, the reliance on standard quantitative measurements (such as cash expenditures, education and market access) is highly questionable, and the inability or unwillingness to fully value pastoral production and consumption leads to misconceptions about the nature and extent of poverty among pastoral populations (Little *et al.* 2008; Devereux, 2007).

2.1.2 Data on East African Pastoralists

Numerous economic definitions of pastoralism exist, and most refer to Swift's (1988 p.2) definition that pastoral production systems are those:

> *"in which at least 50 percent of the gross incomes from households (i.e. the value of market production and the estimated value of subsistence production consumed by households) come from pastoralism or its related activities, or else, where more than 15 percent of households' food energy consumption involves the milk or dairy products they produce".*

Although this may be a useful definition for conceptualisation, in terms of practical data collection or collation, it poses various problems. To address pastoralist poverty it is essential to have data in which pastoralists are represented. Defining pastoralists on the basis of income or consumption sources means that the status of specific households as pastoralist or otherwise can fluctuate following drought or temporary diversification into alternative livelihood activities. This problem can be avoided by aggregating data and applying the definition at the community level, although defining a 'community' can also be problematic[4]. For the purposes of national statistics, Swift's (1988) definition is prohibitively data-demanding since detailed and accurate household budget data are required (Randall, 2006). That is not to say that Swift's definition of pastoralism is not useful, but that a definition must suit the purpose for which it is to be used. As highlighted by the forthcoming *Report on the State of Pastoralism* (ROSP)[5] (Oxfam, 2009), one constraint to raising the profile of pastoral issues on national and international development agendas is the lack of disaggregated data on pastoralist livestock production and well-being. For small studies involving very detailed data collection, Swift's (1988) definition can be very useful. For larger data sets, alternative definitions of pastoralists which do not rely on detailed household budget data are more practical. The importance of the ROSP and ongoing efforts to represent pastoralist communities in national statistics must be underpinned by a consistent and practical definition of pastoralism. Definitional inconsistency may give a false impression of demographic and livelihood trends.

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[4] The problematic concept of 'community is addressed in the following chapter.

[5] The Report on the State of Pastoralism (ROSP) is part of Oxfam's Regional Pastoral Programme in the Horn and Eastern Africa. The project aims to improve the quality and accessibility of information on pastoralism. A draft copy of this, as yet, unpublished report was made available to the author (cited with permission).

As described above, definitions based on consumption and income sources provide a very useful rule of thumb, although exceptions can always be found. Pastoralists may not always fulfill such criteria, yet still consider themselves pastoralists. Oxfam's (2008) study, *Survival of the Fittest,* defines pastoralists who do not own any stock as, 'ex-pastoralists'. This distinction is contested in light of the large numbers of people who return to pastoralism following a period of reliance on relief food (McCabe, 1987). Excluding stockless pastoralists also disregards the important social and cultural aspects of self-identification as a 'pastoralist' (Baxter & Hogg, 1990). Increasingly blurred boundaries between rural and urban livelihoods and the diversification of livelihood activities means that pastoralism is expanding to include a new set of networks and activities, as old ones are becoming ineffective. In this context, defining a 'pastoralist' requires an ever broader definition to capture diverse activities and livelihood strategies that are being employed as part of modern pastoralism.

With uncertainties over definitions, and the fact that pastoralists are often poorly covered even by relatively effective national censuses, it is hard to produce reliable figures for pastoralist populations. FAO estimated in 2003 that nomadic and transhumant pastoralists number between 100 and 200 million people globally (FAO, 2003). It is estimated that Sub-Saharan Africa contains one half of the world's pastoral peoples (Swallow, 1994). Roughly 25 million pastoral and agropastoral people live in the East African countries of Kenya, Tanzania, Uganda, Ethiopia, Eritrea, Sudan, and Somalia (Morton, 2003). Pastoralism is a major livelihood and production system in East Africa, with pastoralists found in all the countries of the region. Kenya is home to an estimated 4 million pastoralists, constituting more than 10 percent of the population. Pastoral and agropastoral communities occupy the arid and semi-arid land that constitutes 80 percent of the national land mass (PPRS, 2001). In Uganda, pastoralists constitute 22 percent of the population. However, up to 80 percent of the population derive their livelihoods from subsistence agriculture

and livestock, producing 85 percent of the milk and 95 percent of the beef consumed in the country (King, 2000). In Tanzania, it is estimated that the pastoral economy is the basis of the livelihood of 10 percent of the population. Pastoral communities are the backbone of Tanzania's livestock sector, owning approximately 99 percent of the livestock, while the big ranches and dairy farms own a mere 1 percent (Odhiambo, 2006). In Sudan, pastoralism is practised by about 20 percent of the population and accounts for 80 percent of the country's livestock wealth (Abu Sin, 1998). In Ethiopia roughly 36 percent of cattle, sheep and goats are kept by pastoralists in the drylands (Hesse & MacGregor, 2006). Problems of defining mobility, in all its different forms, exacerbates the imprecision of the above estimates. The increasingly blurred boundaries between rural and urban livelihoods, and the process of livelihood diversification, further complicates categorisation of livelihoods and the production of reliable aggregated statistics.

Mobile pastoralists are often affected by enduring social tensions resulting from competition over natural resources, although the frequent association of pastoralist groups with 'ritual violence' exaggerates the problem (Walsh, 2007; Hesse & MacGregor, 2006). Cooperation with neighbouring groups is the norm in pastoral areas, both with other pastoralists and with farming and urban communities (Nori & Davies, 2007). Ties with the latter have become increasingly important in the process of diversifying pastoral livelihoods and integrating them with the marketplace. Inter-group tensions exist partly because the boundaries within which pastoralist groups move are flexible and contested (Huysentruyt *et al.* 2002). The process of groups advancing into new areas or being forced out of old areas was a constant fact of life until relatively recently (for examples in Kenya see Ensminger, 1996; Sobania, 1979). The drivers of conflict in East Africa are complex. However, increasing poverty due to: declining herd sizes; lack of alternative livelihoods; conflicting and competing rights and entitlements; and poor provision of basic services and infrastructure, all aggravate pre-existing tensions. Persistent violence in East African drylands points to the presence of factors which have degraded the ability of local

institutions to resolve conflict (Mwangi & Dohrn, 2006). The decline in the capacity and authority of pastoral institutions, and its effect on livelihood strategies, is a key factor in understanding pastoral livelihood transitions more broadly, and will be covered in greater depth in Chapter Seven.

2.2 Sedentarisation

The settling of formerly nomadic pastoralists is steadily increasing in northern and eastern Africa. Pastoralists are moving close to towns for a variety of reasons, including loss of grazing land, political and economic insecurity, but also by the attractions of town life which may offer increased economic opportunities and social security following the decline in customary social insurance mechanisms. Sedentarisation[6] is not a single process, it does not occur in the same way for all pastoralists, nor even in the same way for one pastoral society. People may be attracted to towns to increase the marketing of livestock and dairy products, to care for ill family members in clinics, to attend school, or to engage in wage labour. Sedentarisation is not necessarily a one-way process, as many town residents will return to a mobile livelihood when conditions and opportunities change (McCabe, 1987).

In Ethiopia, Somalia, Sudan and Kenya, many pastoral peoples have moved towards towns to escape civil war, armed livestock raiding, or other political insecurities (IIED & SOS Sahel, 2008; Galaty, 2005; Swallow, 1994). In less disrupted regions, pastoralists seek access to improved healthcare, schools, and markets (Fratkin & Smith, 2005). Grazing lands of many pastoralists have decreased significantly since the 1960s due to privatization of land, growth of both agricultural and pastoral populations, and, in Kenya and Tanzania, the expansion of tourist game parks (Galaty, 1992; Campbell, 1984). Pastoralist society is also becoming more differentiated as market integration produces greater wealth disparities and opportunities for investment in alternative income generating activities. These

[6] Sedenterisation refers to the transition from mobile livelihoods to permanent, year-round settlement.

changes, in combination with the effects of recurrent droughts, are undermining traditional social insurance mechanisms. East African pastoral societies have a variety of social mechanisms that allow transfer and loans of animals between family or clan members (Huysentruyt *et al.* 2002; Spencer, 1998). Livestock loans also serve to split the owner's herd across multiple locations, which reduces localised risk factors such as disease and predation. Livestock transfers also allow pastoralist families who have lost their herds to remain part of the mobile group and continue to provide labour and defend the groups herds and grazing areas. However, when these social insurance mechanisms fail and a family's herd size drops below the level viable for mobile pastoralism[7], the family are forced to take up residence in small towns that have grown up in pastoral areas, where relief food distribution points are located. The role of relief food provision and the static provision of other public services, in sedentarisation and the breakdown of customary social insurance mechanisms will be examined further with reference to empirical data in Chapter Four.

2.3 The Value and Significance of Pastoralism

Most of East Africa's livestock wealth is kept by pastoralists in the drylands. The bulk of the meat, milk and other livestock products consumed in the Horn of Africa come from pastoral areas in the drylands (ODI, 2009a). The semi-arid and arid areas in the Horn make up 70 percent of the total land area, and provide an average of 20 to 30 percent of GDP, with substantial sub-regional trade (Little, 1996). However, Hesse & MacGregor (2006) describe pastoralism as "drylands' invisible asset", and in this section the various contributions of pastoralism which are rendered invisible to policy-makers will be examined. As Odhiambo (2006) points out: whether the lack of information on the contribution of pastoralism leads to policies which ignores it, or whether misconceptions concerning the pastoral system lead to disinterest and a lack of motivation to generate good information is a moot point. However, the

[7] Lybbert *et al.* 2004 estimates that a minimum herd of 8-12 cattle is required for mobile pastoralism because indigenous breeds' lactation rates are relatively low and multiple herders are required to supervise and guard a herd.

contribution made by pastoralism to the ecosystem at local and global scales, the contribution to national and regional economies, and the benefits conferred to linked industries like tourism, *nyama choma*[8], and leather are undoubtedly substantial. This will be demonstrated below with reference to data from East African countries.

It must also be made clear that as well as significant contributions to the economy and ecosystem, pastoral livestock systems are in fact more than simply a mode of livestock production with positive environmental externalities. They are also consumption/ subsistence systems that underwrite the household food security of a huge global population. The extent of the global pastoralist population is unknown due to the problems of definition and lack of reliable statistical data discussed above, but certainly pastoralists are a significant group globally, numbering over 100 million (FAO, 2009). If the value of their consumption, in combination with accurate information on the value of economic and ecological contributions were factored into land-use productivity evaluations then a holistic value could be attributed to pastoralism. This information could then be used as the basis for lobbying for more support for pastoralist communities as practitioners of a sustainable, efficient and profitable land-use.

Factual inconsistencies on the significance of pastoralism in East Africa abound in the literature and further highlight the need for practical definitions and reliable data. For Kenya, data on the proportion of the national herd in pastoral areas range from 50 percent (Simpkin, 2004 cited in Oxfam, 2008) to 60 percent (GoK, 2002, 2001, 2000a cited by Mortimore *et al.* 2009; IUCN, 2006) to 75 percent (Omiti & Irungu, 2002). Likewise, concerning the amount of meat produced in pastoral areas as a percentage of national production, figures range from 36 percent (averaged across Cattle, Goat and Sheep, (Rass, 2006)) to 67 percent (GoK, 2002, 2001, 2000 cited by Mortimore *et al.* 2009). The magnitude of variation in these figures undermines efforts by development organisations, NGOs and CSOs to emphasise the economic

[8] *Nyama choma* literally means ‘roast meat’ in Kiswahili

contribution of pastoralism in order to justify increased and proportionate investment and services.

In Ethiopia, total government budget allocation for livestock represented only 0.3 percent (for the periods 1993-94 and 1998-99) despite livestock contributing about 40 percent of agricultural GDP and more than 20 percent of total GDP (ODI, 2009b). This chronic and disproportionate under-investment in pastoral areas and livelihoods is typical for East Africa and results in human development indices that lag far behind national averages (MEA, 2005). In West Africa, the pastoral sector contributes between 10-20 percent of total GDP in Mauritania, Mali and Niger. In Kenya the livestock sub-sector employs 50 percent of the agricultural labour force (Mortimore *et al.* 2009). Apart from employment, the contribution of pastoralism to the livestock sector in Kenya is substantial. Off-take rates from pastoralist herds are estimated at 6-14 percent for cattle, 1-3 percent for camels and 4-10 percent for sheep and goats. This translates into 221,300- 513,630 head of cattle, 9,250- 28,000 camels, 231,960- 597,000 goats, and 156,600- 391,500 sheep removed from pastoral herds annually. The estimated value of this off-take ranges from USD 68.5 million to USD 109.5 million (GoK, 2000b).

There are numerous examples of contributions from pastoralism not captured in national accounts. An innovative study commissioned by the 'Regional Programme on the Reinforcement of Pastoral Civil Society in East Africa' in 2005 found that 2.2 million people in Tanzania obtain part of their annual income from the *nyama choma* industry– worth USD 22m annually. Every pastoral cow slaughtered adds USD 172 worth of value to the economy, supports 0.24 full-time jobs and 1.07 dependents outside of the pastoral economy (Letara, 2006).

It is estimated that 95 percent of livestock cross-border trade in East Africa occurs informally which means it is not recorded in national accounts (Little, 2001). The scale of transactions occurring in the informal economy, and therefore under-

representing the national significance of pastoralism, is substantial. In Ethiopia's Somali region, for example, it is estimated that the actual value of cross-border livestock sales is 3-6 times that of the official figures for the whole country (Scott-Villiers, 2006). Likewise in Namibia, pastoralism is estimated to contribute 1.8 times the official reported figure (Davies, 2007). Pastoralist livestock provide about 20 per cent of draught power in Ethiopia, which is estimated to be worth USD 155m annually. The value of these services are not attributed to pastoralism in official figures (Rodriguez, 2008). Hides and skins are among Ethiopia's top four revenue earning exports (accounting for 85 percent of the country's livestock product exports), and are worth USD 600m annually, a third of which is from pastoral sources (Rodriguez, 2008). A similar story is true in Uganda and Tanzania where hides and skins are significant exports, and the pastoralist contribution is undervalued (Oxfam, 2008). All of these significant contributions to national economies are not attributed to pastoralism in national statistics.

Aside from the contributions to the livestock sector, pastoralism is a natural resource management system that supports a wide range of products and services that are globally valued, such as biodiversity protection, tourism, and carbon sequestration (Mortimore *et al.* 2009). Pastoralists have historically helped maintain the rich biodiversity in pastoral lands, which are home to an impressive variety of animals and plants. National parks and other protected areas in the region fall predominantly within the drylands. In Kenya 92 percent and in Tanzania 33 percent of protected areas are in pastoral lands (IIED, 2009). Tourism brings in annual returns of between USD 900 million and USD 1.2 billion to Tanzania's economy, and represents 13 percent of Kenya's GDP (Oxfam, 2008) and over 9 percent of Uganda's (Hesse & MacGregor, 2006). Dryland ecosystem health is better where mobile pastoralism continues to be practised effectively. Healthy ecosystems encourage the presence of the wildlife upon which the tourism industry is based (Mortimore *et al.* 2009). Grasslands store approximately 34 percent of the global CO_2 stock, a service worth USD 7 per hectare. African grasslands extend to 13m square kilometers (equivalent

to 1.3 billion hectares) and have vast carbon sequestration potential when maintained under sustainable production and land use systems.

While these figures are significant and clearly illustrate that pastoralism is substantially economically and environmentally under-valued, the majority of the revenue generated by pastoral products and services rarely accrues to pastoral communities. A study in Uganda showed that even though pastoralism contributes a sizeable proportion of locally generated revenue, very little of this goes back into pastoral areas (IIED, 2009). In Ethiopia, only a fraction of the vast revenues from hides and skins can be accessed by pastoral communities (Rodriguez, 2008). Likewise, a minuscule proportion of the colossal tourism revenues described above are received by pastoralists.

2.4 The Drylands and Dryland Ecology

2.4.1 An Introduction to the Drylands

Pastoralist livelihoods are defined as much by the dynamics of dryland ecosystems as by their relationship with 'the market', and other social, political and economic factors (Reynolds *et al.* 2007). This section covers a brief overview of dryland ecosystems, the historical debates that inform current understandings, and the significance of drylands ecology in understanding the rational basis for pastoralist livelihood strategies.

Scarce and unreliable rainfall is the defining feature of the drylands of East Africa. Rainfall variability both between years and within years is normal in these areas and represents the single most important factor determining the quantity and quality of natural pastures and water (Hesse & MacGregor, 2006). Pastoralism predominates below about 400 mm mean annual rainfall, with mixed farming prevailing in the higher rainfall zones (Anderson *et al.* 2003). High temperatures ensure that a large proportion of rainfall is lost in evaporation, and intense downpours combined with sun-baked soil crusts result in a high level of water run-off (Anderson *et al.* 2009).

Table 2.1 shows the global extent, human population, and land-uses for different categories of the drylands. The African drylands[9] are home to 268 million people, or 40 percent of the continent's population, and excluding deserts they comprise 43 percent of the continent's inhabitable surface area (Anderson *et al*. 2003). The semi-arid and arid areas in the Horn region of Africa make up 70 percent of the total land area, this ranges from 95 per cent of the total land area in Somalia and Djibouti (Oxfam, 2008), to more than 80 per cent in Kenya (GoK, 2004), 60 percent in Uganda (WISP, 2007) and between 30–60 per cent in Tanzania. As discussed above, the importance of the drylands resides not only in their physical extent but also from their contributions to livelihoods, national wealth, and global economic and environmental processes (Mortimore *et al.* 2009). The drylands support agriculture, livestock rearing, tourism and wild resource harvesting. As a result of the lack of recognition for these livelihood contributions, East African drylands receive little investment and continue to be marred by poverty, food insecurity, and conflict (IIED, 2009).

Table 2.1 Global Drylands: Extent, Population and Land-Use

Sub-type	Aridity index	Share of global area (percent)	Share global population (percent)	Percent rangeland	Percent cultivated	Percent other*
Hyper-arid	<0.05	6.6	1.7	97	0.6	3
Arid	0.05-0.20	10.6	4.1	87	7	6
Semi-arid	0.20-0.50	15.2	14.4	54	35	10
Dry subhumid	0.50-0.65	8.7	15.3	34	47	20
Total		41.3	35.5	65	25	10
*Includes urban						

(The aridity index is the ratio of precipitation to potential evapotranspiration)

Source: Mortimore *et al.* 2009

[9] Drylands in this context are those areas receiving about 100-1000 mm rainfall annually but on a highly seasonal basis so that there is a prolonged (>5 month) dry season (or two shorter dry seasons near the equator) during which plant production is severely curtailed. The ratio of rainfall to potential evaporation in such areas is generally less than 0.5 (Anderson *et al.* 2003)

2.4.2 A Brief History of Range Ecology

In many institutional contexts, drylands are perceived as 'wastelands' and pastoralists as 'opposed to change', 'routinely violent' and 'irrational' (Hesse & MacGregor, 2006; Walsh, 2007). However, there are signs that perceptions of pastoralists in national governments are beginning to change (GoK, 2010a), although it remains to be seen whether policies will be implemented to support sustainable land-use systems in the drylands. National governments in Africa are starting to recognise the drylands as embodying opportunities, and pastoralists as being efficient users and stewards of dryland ecosystems. However, in practise the overwhelming majority of policy (and policy implementation) is not supportive of pastoralism, much less mobile pastoralism. Pastoral mobility, and the remoteness of arid areas from seats of power, have contributed to a lack of understanding on the part of settled communities (Leneman & Reid, 2001). As human populations expand, natural resource conflicts between pastoralists and cultivators have become more common (Ensminger, 1992). Grazing lands are mistakenly seen as unused or 'under-used' and therefore seen as available for expropriation. Irrigated cultivation is seen as a more legitimate and modern land-use by governments, such that disputes are generally settled in favour of cultivators and agribusiness (Horowitz & Little, 1987). Agricultural communities are typically better educated, and able to petition those in power more effectively (Leneman & Reid, 2001).

Aside from negative perceptions of pastoralists by people and policy-makers from the same region, pastoralists have more recently been subjected to misinterpretation by scientists, researchers and policy-makers from the global North. The latest in-depth assessment of the impacts of the world's livestock sector on the environment, FAO's 'Livestock's Long Shadow' (2006) perpetuates misconceptions about pastoralism, linking them with land degradation and depleting biodiversity. It fails to make the distinction between different livestock production systems ranging from landless industrial grain-fed systems to nomadic pastoralism (Köhler-Rollefson & Brehm, 2007).

Pastoral development has been dominated by a discourse about 'degradation of the range' through over-stocking by pastoralists. The construction of mainstream scientific misconceptions of pastoralism began with Herskovits' (1926) influential paper on the 'cattle complex'. Herskovits believed pastoralists had an irrational desire to increase the size of their herds for reasons of pride or social tradition. Hardin (1968) on the other hand, believed that pastoralists accumulated large herds in order to appropriate for themselves as much of a communal resource (land) as they could, in order to turn it into a private appropriable resource (livestock). In its account of the pastoral system, Hardin's (1968) paper, entitled *The Tragedy Of The Commons,* describes 'herdsmen' exercising no control over usage of grazing lands leading inevitably to overuse and degradation as the human and livestock population increases over time.

Hardin's choice of example is misinformed. Pastoralists' grazing lands are not open-access in a practical sense, nor do pastoralists serve to gain any advantage from acting individually. There are myriad reasons for both of these 'tragedy theory' confounding points. Firstly, in order to graze animals on an area of land there must be a source of water for the livestock. In the dry season when water is scarce, wells are controlled by identified groups, thereby controlling access to surrounding grazing land. Secondly, stocking rates are now not believed to be the determining factor in sward species composition and biomass production in arid environments with highly variable inter-annual rainfall (Ellis, 1994). Lastly, the very essence of pastoral livelihoods is group coordination. This is completely rational in a highly variable environment (prone to climate shocks and insecurity) whereby a strong group is essential to ensure access to grazing, enhance security and provide social insurance in crisis (Huysentruyt *et al*. 2002). Self-seeking behavior on the part of the pastoralist is completely non-rational in such a context.

Regardless of this inappropriate application of 'tragedy theory', the concept albeit indirectly, still casts a shadow in the mind of policy-makers and non-specialists to

this day. This is exemplified by persistent linking of pastoralism to overgrazing and degradation despite widely accepted advances in modeling highly variable environments. Herskovits (1926) and Hardin's (1968) misconceptions of pastoralism are both predicated on misguided models of dryland ecology, whereby stock density over a certain threshold (the carrying capacity) will result in range degradation or 'desertification' (Warren and Agnew, 1988). Such assumptions are based on Clementian[10] models of plant succession whereby an ecosystem will progress to a climax state of equilibrium in the absence of any external 'disturbance'. This kind of classical ecological theory in combination with misleading short term observations of an 'advancing desert margin' were key components in the formation of the United Nations Environment Programme (UNEP, 1977). Lamprey's (1975) study on the Sudanese Sahel, and Eckholm and Brown's (1977) study, *Spreading Desert, the Hand of Man,* were influential in framing the discourse about arid areas in terms of 'desertification'. Lamprey's study involved a comparison of aerial observations with a vegetation map of the same location dating from 1958. In a highly variable environment like the Sahel such snapshots of plant biomass in specific locations are largely meaningless in terms of identifying trends and causal relationships. However, Lamprey's estimate of desert advance (5-6km per year) based on a less than rigorous study, has been quoted repeatedly. Following its prominent use in the Bruntland Report, *Our Common Future* (Bruntland, 1987), it became a virtually uncontested fact appearing in environmental textbooks and national policy documents (Benjaminsen & Berge, 2000). Lamprey pointed blame for the 'desertification' directly at the inhabitants of the desert margin. However, a subsequent series of studies (Hellden 1988; Tucker *et al.* 1991), based on a decade-long record of remote sensed data, suggested that the Sahara was not advancing at all. There were no long-term trends and no evidence of massive human-induced degradation. Instead, researchers found that the Sahara-Sahel boundary is very dynamic and moves both north and south in response to annual rainfall variability (Ellis, 1994).

[10] A concept conceived by the ecologist Clements in 1916

The issue of desertification and land degradation was, however, still high on the international agenda in 1992 at the time of the Rio Earth Summit (UN, 1992). Desertification formed one of the three themes to be addressed at the summit along with biodiversity and climate change. As a result of the Earth Summit, the Convention to Combat Desertification (UN, 1994) was ratified by members and entered into force in 1996. There has, however, been a great deal of criticism over the 'neomalthusian' focus of the UNCCD (*cf.* Kohler-Rollefson & Brehm, 2007; Leach & Mearns, 1996; Movik *et al.* 2003).

2.4.3 The Consolidation of New Range Ecology

A radical re-thinking of range ecology in the 1980s argued that the classical ecological paradigm could not be applied to most dryland ecosystems. Researchers began to recognise that it was unrealistic to model highly variable dynamic environments with the concept of 'stable equilibrium', and instead proposed alternative models, such as the 'state-and-transition' model (*cf.* Stringham *et al.* 2003) and the 'non-equilibrium model' (*cf.* Behnke & Scoones, 1993; Ellis & Swift, 1988; Sandford, 1983). Both of these models recognise that equilibrium conditions may be rare or non-existent for certain ecosystem types. As with most 'radical' revisions of long accepted theories, there are some long-term precedents. Indeed ideas about non-equilibrium ecosystem dynamics could be found in the early 1970's. Holling (1973) was among the first to apply the emerging concept of complexity to ecological systems. Walker and colleagues (Walker *et al.* 1981; Walker & Noy-Meir, 1982) recognized the relevance of such concepts to Africa's arid rangelands (Ellis, 1994). The non-equilibrium model of ecosystem dynamics is now accepted as a mainstream theory although its significance in terms of the effect of grazing on species composition and biomass production under various environmental conditions is still the subject of debate (Illius & O'Connor, 1999; Sullivan & Rohde, 2002; Hein & De Ridder, 2006). In practise, the distinction between equilibrium and non-equilibrium environments is often blurred (Scoones, 1995). There is, however, broad consensus that in arid areas with highly variable inter-annual rainfall, grazing pressure is a less important determinant of species composition and biomass

production than the amount of rain and available soil moisture (UNDP, 2003). In East Africa, topography, fire management, soil fertility and grazing intensity are other key but secondary determinants of pasture quantity and quality (Hesse & MacGregor, 2006).

This upheaval in the basic assumptions of range ecology for highly variable environments marked a departure from simple assumptions and succession models to a greater appreciation of the complexity of vegetation dynamics (Roe *et al.* 1998). Although the danger of damage by concentrations of livestock to soil structure and vegetation must not be ignored, the evidence of widespread rangeland degradation under pastoral grazing is unreliable. Nonetheless, this perception is proving difficult to change, possibly due to the persuasively simple logic of 'tragedy theory' (Hardin, 1968) and the existence of significant pastoral poverty (MEA, 2005).

2.4.4 The Implications of Non-Equilibrium Dynamics

Increased understanding of the ecosystem dynamics upon which pastoralists base their livelihoods reveals not only the efficiency of pastoral management strategies and the fallacy of widespread environmental degradation, but also the beneficial effects of pastoralism whereby ecosystem health is better than under alternative production systems (Hesse & MacGregor, 2006). In the absence of pastoral herds, 'under-grazing' can negatively affect species composition and result in bush encroachment and colonisation of unpalatable species (Kinyamario & Imbamba, 1992; Naveh & Kutiel, 1990). Grazing of pastoral herds also fertilises the soil, enhances water infiltration, and helps seed dispersal which maintains pasture diversity (IIED, 2009). Evidence from northeastern Senegal suggests that under-grazing resulted in a species composition with lower palatability, topsoil containing lower phosphorus levels, lower herbaceous density, and lower biomass production (Niamir-Fuller, 2000). In East Africa, bush encroachment has rendered large areas of the drylands unusable as a result of reduced numbers of grazing animals due to drought, or where conflict deters herders from using the area (IIED, 2009).

Predicting levels of production or ecosystem structural change over time is virtually impossible in non-equilibrium ecosystems. In such variable systems with frequent droughts, when pastures fail livestock either die or migrate. This means that plants and herbivores do not develop closely coupled interactions (Ellis, 1994). Seeds in the soil act as a base for recovery of vegetation although not necessarily with the same composition of species (Mortimore *et al.* 2009). In this way the impact of livestock on vegetation is minimised as recurrent drought forces herders to move frequently. Heavy livestock grazing can, however, cause a gradual transition in the balance of vegetation composition, particularly discouraging herbaceous plants like grasses in favour of woody plants like shrubs and trees which are less palatable to grazing stock (Hiernaux 1998; Rohde *et al.* 2006).

In non-equilibrium ecosystems, rainfall variability has more significance than the rainfall mean. The threshold whereby by non-equilibrium over equilibrium dynamics dominate in an ecosystem is believed to occur when the rainfall coefficient of variation (CV) reaches 30-33 percent (Caughley *et al.*1987; Ellis & Galvin, 1994). In reality the distinction between these types of ecosystem dynamics is not discrete and cannot be predicted on the basis of CVs alone. Rather, as Scoones (1995) points out, there is a gradation between these two ideal types. Evaluating the dynamics of an ecosystem on the basis of CVs of rainfall[11] with primary production can be misleading. As Ellis (1994) explains, moderate negative deviations from mean rainfall which occur frequently can lead to CVs that are comparable with those from a system in which infrequent but large negative deviations from mean rainfall occur. The effect of these contrasting ecologies can have very different effects on livestock mortality because the length of droughts has more of an influence on livestock mortality than the frequency of droughts. Multi-year droughts are usually the cause of significant livestock mortality, whereby the length of the drought is more critical to mortality rates than the number of animals enduring the drought (Ellis & Swift,

11 For studies on coefficients of variation for grass biomass production with rainfall: in Ethiopia see Bille 1982, Cossins and Upton 1988, and Coppock 1994; in Zimbabwe see Dye and Spear 1982, and Noy-Meir and Walker 1986.

1988). The relationship between these variables influences pastoralist management strategies which are designed to maximize the reliability of the production system in an uncertain environment. In the following section, the role of mobility as a key management strategy in taking advantage of this environmental variability will be briefly examined.

2.5 Pastoral Mobility

To prosper as a livestock keeper in a highly variable, unpredictable environment where fodder availability is widely dispersed and erratic, management strategies which embrace opportunism and mobility are essential (Swallow, 1994). In terms of production, mobility involves gathering information concerning the location of the best quality feed within the mobility range of the herd and within range of an adequate water point, then planning the migration route. As the scale of migration increases, primary production variation decreases substantially (Scoones, 1994). This is one of the key concepts in rationalising mobile pastoralism- by using mobility pastoralists can manage and reduce environmental variation, thus increasing the reliability of their production systems. This concept is a departure from the mainstream view that pastoralists are reactive and that their livelihoods consist of 'risk avoidance' and 'coping strategies'. This theme will be revisited in Chapter Four, as patterns of mobility, the drivers and effects of sedentarisation, and the basis of pastoral livelihood strategies, are examined more closely.

2.5.1 Factors affecting mobility

Mobility to maximize livestock nutrition is only one motivation for migration. In areas prone to banditry (national borders and remote areas) people may prefer to stay close to settlements such that they are in closer proximity to government security personnel, and keep their animals in large herds for increased protection against raids. Accessing markets and avoiding disease vectors can also require migration. Adoption of new technologies like trypanocidal drugs can overcome the necessity to avoid disease vectors and open up areas previously unavailable for grazing. Herders

also move for a variety of social and political reasons, such as to avoid rival groups or to maintain social relationships with neighbouring groups for purposes of trade (McCabe, 2004; Gulliver, 1975). Depending on the circumstances, migrations can be highly predictable or unpredictable, and the distances over which they move can vary. Sometimes whole households move and sometimes just the livestock and herders (Swallow, 1994; IIED, 2009). The type of livestock also influences mobility patterns, cattle and camels are highly mobile in comparison to sheep and goats. Smallstock cannot tolerate many days without water which further reduces the range over which they can graze in the dry season. Pastoral breeds of cattle have been bred for generations for their ability to walk long distances to reach and exploit distant pastures while tolerating lack of water for many days.

A major factor affecting pastoral mobility is land tenure. Pastoralists need secure access to pasture to prevent further expropriation of grazing land, but also tenure arrangements that are flexible enough to accommodate mobility to other areas in response to unpredictable conditions and events (Fernández-Giménez, 2002). A lack of secure land tenure can impede pastoral mobility. In some instances, pastoralists in Tanzania and Kenya have resorted to cultivating land for the sole purpose of staking a claim to ownership. They are forced to appeal to mainstream notions of legitimate land-use (IIED, 2009). The 'off-the-shelf' solution to insecure land tenure has often been to establish fixed boundaries, with access rules granted to specific groups or individuals. In the pastoral context, this logic (derived from the 'tragedy of the commons' theory described above) has resulted in a number of ranching interventions, notably the creation of Maasai 'group ranches' in Kenya in the 1980's which have been largely unsustainable (Galaty, 1994). The unsuitability of ranching schemes in non-equilibrium ecosystems is discussed below with reference to comparative studies of livestock productivity between pastoral and ranching systems.

2.5.2 Productive Advantages of Mobility

Section 2.3 described how pastoralism generates substantial contributions to national economies, to ecosystem health, to livelihoods, and to global climatic systems (in

terms of the carbon sequestered and stored by grasslands[12]). A tacit assumption that may set in, however, by focusing on such benefits is that in terms of productivity, pastoralism cannot be compared with the relatively intensive practise of ranching. Rennie *et al.* (1977) compared production per cow under what they claimed was a commercial ranching management system with production under pastoral management on communal rangelands. They concluded that productivity under ranching can be twice that of pastoral management. It was pointed out by Behnke (1985) that Rennie *et al.* had used data from an experimental ranch where uneconomically high intensity management is possible. Hubbard (1982) recalculated using realistic production data for a commercial ranch and found that productivity was higher under ranch management but only by a small margin (Abel & Blaikie, 1990). De Ridder & Wagenaar (1984) reworked Rennie *et al.'s* (1977) calculations on the basis of productivity per hectare, rather than per cow and factored in the value of milk produced for human consumption and draught power. This redefinition of production criterion resulted in pastoral management having double the productivity of the ranching system. Unfortunately, De Ridder & Wagenaar's 1984 study, which remains widely quoted (World Bank, 2006), neglected to use Hubbard's (1982) revised calculations. If their study had utilised Hubbard's more realistic productivity data for commercial ranching, the comparative productive advantage of pastoral systems over ranching would be far higher. It can therefore be concluded that the spatially and temporally dispersed rainfall patterns typical of the drylands, allows pastoralists to harness environmental variability to enhance productivity and reduce risk. It is this highly skillful management strategy which explains the the vastly superior production of pastoralist systems in comparison to alternative livestock production systems in Africa's drylands (for Kenya, (*cf.* Western, 1982); for Ethiopia, (*cf.* Cossins, 1985); for Botswana (*cf.* De Ridder & Wagenar, 1984), and for Zimbabwe (*cf.* Barnett, 1992).

[12] Tropical savannas have a greater potential to store carbon below ground than any other ecosystem (264 Gt C) (IPCC 2000).

2.6 The Implications of Climate Science for the Drylands

2.6.1 Climate Science Background

With the recent series of high profile inter-governmental meetings (COP15 Copenhagen, December 2009; COP14 Poznań, December 2008), as part of the United Nations Framework Convention on Climate Change (UNFCCC), significant international attention has been drawn to the issue of climate change. It can be anticipated that climate change will remain a central funding theme and research area for the foreseeable future. Consequently, an emerging theme in drylands research is the impact of climate change on pastoral livelihoods (Nori & Davies, 2007).

The Inter-Governmental Panel on Climate Change's (IPCC) synthesis report, *Climate Change 2007* states unequivocally that, "warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice and rising global average sea level" (IPCC, 2007). As part of its *Fourth Assessment Report* (2007) the IPCC goes on to state that increases in global temperatures since the mid-20th century are highly likely to be due to elevated anthropogenic greenhouse gas (GHG) concentrations. However, the IPCC does not distinguish between anthropogenic effects and natural variability in terms of defining climate change, whereas the UNFCCC (1992) refers to "a change that is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and that is in addition to natural climate variability observed over comparable time periods". The IPCC (2007 p.13) defines climate change based on:

> *"changes in the state of the climate that can be identified by changes in the mean and/or the variability of its properties, and that persists for an extended period, typically decades or longer. It refers to any change in climate over time, whether due to natural variability or as a result of human activity".*

Scientific evidence based on a growing number of longitudinal studies, has led to a broad consensus among the scientific community that the global climate is changing.

The significance of this, in isolation, to the livelihoods of pastoralists living in Africa's drylands is not straightforward. Despite the fact that there have been longer and more intense droughts in sub-Saharan Africa since the 1970s (IPCC, 2007), pastoralist systems have not become compromised primarily for this reason (Nori & Davies, 2007). Indeed, climatic variability has always been a feature of Africa's rangelands and the development of the pastoral production system was an adaptation to this variability (Brooks, 2006a). The reality for a substantial number of Africa's pastoralists, is that social, political and economic marginalisation (IIED, 2009) has a more significant role in constraining the successful pursuit of their livelihoods, than the climatic changes that have taken place over the last 40 years (Nori & Davies, 2007).

Limitations placed on pastoralists' ability to move freely in order to track resource availability and access key resources, lack of access to markets (which is exacerbated through insufficient transport and communication infrastructure), and exclusion from the policy-making process, compromise the innate adaptability of the pastoral production system (ALive, 2006). Therefore, while Africa's drylands are undoubtedly on the 'frontline' of climate change (IIED, 2009) and regarding them as a priority for 'climate adaptation' projects and funding is entirely justified, it is misleading to conceive of the challenges of modern pastoralism as being principally defined by climate change. In order to engage meaningfully with pastoralist communities, the root causes of marginalisation must be addressed as a means to support their autonomous ability to adapt, as they have done for millennia (Oxfam, 2008). Emphasising longstanding non-climate challenges that constrain pastoralist livelihoods, is not to diminish the significance of climate change to pastoralism in the future. Rather it highlights the need to address constraints and opportunities for pastoralists in a holistic way without over-emphasising one factor in the interests of political expediency, or to focus on climate change at the cost of neglecting the underlying causes of pastoral marginalisation and poverty. The following sections will focus on the predicted climatic changes and the implications for the livelihoods of dryland communities.

2.6.2 Predicting the Future

The IPCC reports that if trends in GHG emissions continue unabated, global temperatures will rise by 1.4 - 5.8 ºC by 2100 (IPCC, 2007). GHG concentrations have been rising at a rate greater than projected in the most pessimistic climate change scenarios used by the IPCC (Brooks & Grist, 2008). Based on this and other emergent data, a growing number of scientists are raising concerns that the IPCC's projections are likely to be conservative and over-optimistic (Hansen *et al.* 2008; Palmer *et al.* 2008; Vermeer & Rahmstorf, 2009; Rahmstorf, 2007; Rahmstorf *et al.* 2007; Wheeler, 2007). The IPCC climate predictions are based on 21 General Circulation Models[13] (GCMs). Predictions for different regions vary considerably among the 21 GCMs used by the IPCC in its Fourth Assessment (2007). The probabilities of IPCC predicted climatic changes are based on the degree to which the various GCM models agree for climatic changes in specific geographical areas (Mortimore *et al.* 2009).

For sub-Saharan Africa, most climate change models predict rising temperatures and decreasing rainfall in many dryland areas. If these predictions materialise, there will be a continuation of current trends including more erratic and less predictable rainfall, longer and more frequent droughts, floods and intense wind events (Oxfam, 2008). The impacts of climate change on drylands communities are uncertain, though they are likely to exacerbate the risks to the poor which are already evident in the processes of globalisation (Brown *et al.* 2007). The climate predictions for sub-Saharan Africa indicate drastic reductions in the Length of Growing Period[14] (LGP) which is a crucial variable both for crop and forage production (Mortimore *et al.* 2009). A study by Thornton *et al.* (2006) used several climatic models to predict

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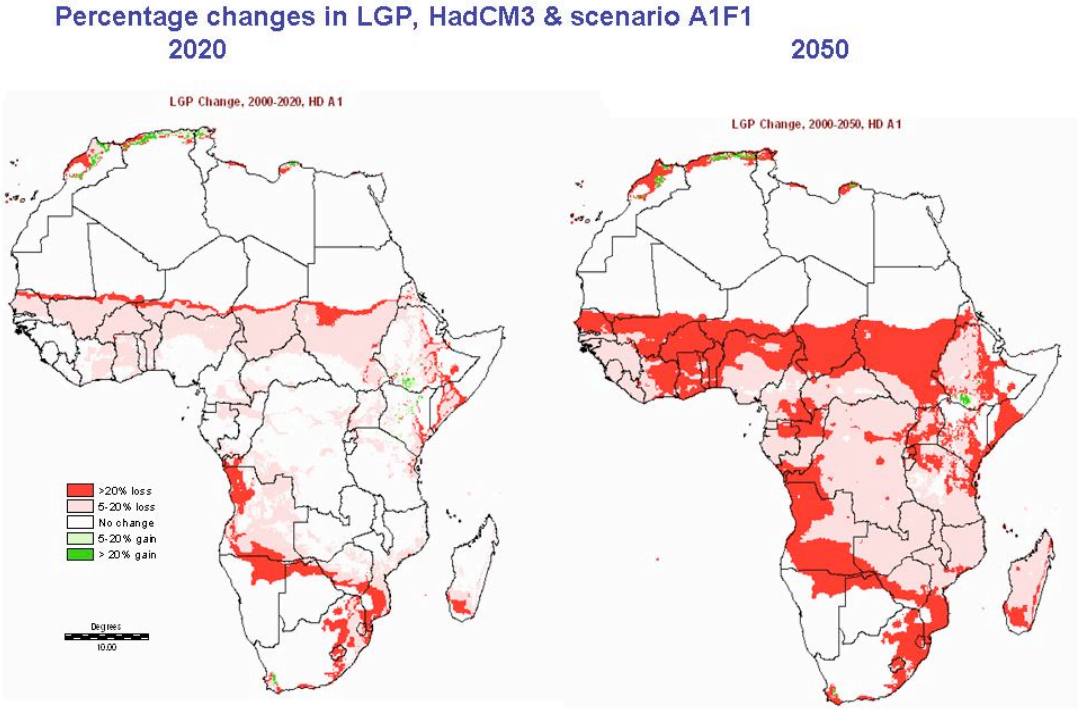
[13] A general circulation model is a mathematical model of the general circulation of a planetary atmosphere or ocean. The IPCC uses coupled ocean-atmosphere GCMs which use transient climate simulations to predict future temperature changes under various scenarios.

[14] In the strongly seasonal climates of drylands, the number of days in which precipitation exceeds a critical minimum determines the growth and maturation of crops and forage, this period is known as the 'length of growing period' (Mortimore *et al.* 2009).

changes in LGPs under different GHG emission scenarios. Considering the current rate of GHG emissions, the most pessimistic of Thornton *et al.* (2006) predictions (based on GHG emissions scenario A1F1) on changes in LGPs may be the best approximation to future conditions for the purposes of development planning. According to this scenario (see figure 2.1), almost all of tropical Africa will experience shorter average growing periods by 2050, and in many areas by more than 20 percent. Even as soon as 2020 both agriculture and livestock production would be substantially affected by the projected climatic changes.



Source: Thornton *et al*. 2006

Figure 2.1 Predicted changes in LGP for Africa using the Hadley GCM model under GHG emission scenario A1F1.

Widespread reductions in LGPs, even if not of the magnitude predicted by the study described above, present a major adaptation challenge. This is particularly the case when reduced LGPs are combined with the other climate effects discussed above. Pastoralism has the innate ability to incorporate rainfall variability and unpredictability (possibly even at the scale predicted) but only if pastoralists are able

to utilise their full range of management strategies, unconstrained by obstructive policies and lack of investment. With enabling policies, investment and support, pastoralism presents a logical adaptation strategy in areas of elevated climatic variability, and may have an important role to play where other livelihoods are likely to fail.

It is important to emphasise that predictions of increasing aridity are not uniform at the regional scale. For parts of the Horn and East Africa, climate science predicts both increased mean annual rainfall and increased temperatures (IPCC, 2007). The IPCC's climate models for East Africa show an increase in temperature of up to 2-4ºC by the 2080s. More intense rain is predicted from October until December over much of Kenya, Uganda, and northern Tanzania as soon as the 2020s, and becoming more pronounced in the following decades (Oxfam, 2008). Increased rainfall when accompanied by elevated temperatures, is not necessarily of benefit to dryland communities. Even when increases in absolute rainfall are predicted in the medium-term, increased evapo-transpiration associated with elevated temperatures can cancel out the beneficial effects (ODI, 2009). Soil types and landscape topography also vary across the region. All of these factors will result in mosaics of climate change effects which will undoubtedly present some opportunities as well as challenges to dryland communities. This has important implications for land-use and development planning.

Despite the need for caution when positively interpreting predictions of increased rainfall, in some areas and for some groups, climate change might be beneficial and present new opportunities (Nori & Davies, 2007). More rainfall could result in more dry-season pasture and extended access to wet-season pasture. It could also result in less frequent drought, which may mean more time for pastoralists to rebuild their herds between droughts (Oxfam, 2008). Climate change could conceivably lead to the expansion of zones under which pastoralism has a productive advantage. The flexibility and mobility afforded by pastoralism may increasingly provide a means of

ensuring reliable production where other more sedentary models fail (Nori & Davies, 2007; Brooks, 2006). However, there are also potential significant negative consequences even with elevated rainfall, including impaired production and livestock mortality through heat stress, longer and more frequent floods, loss of land to agricultural encroachment (as the fall in aridity raises the productive potential of pastoral grazing lands), and the spread of human and livestock diseases that thrive during the wet season (Oxfam, 2008).

It is clear that both climate change and impacts are uncertain and will be highly differentiated across different regions. In terms of development planning and climate change adaptation there is a clear advantage in understanding the range of likely downscaled effects. In the absence of reliable data at scales useful for development planning, broader policies to support autonomous climate change adaptation may be the best low-risk strategy. In order to identify the most appropriate enabling policies to support autonomous adaptation (in tandem with technical interventions), several of the least-developed countries in East Africa[15] have prepared National Adaptation Programmes of Action (NAPAs) (UNFCCC, 2010).

2.7 Conclusion

This chapter has described the overarching context of this thesis, characterising both Africa's drylands and East African pastoralism. The chapter has highlighted the poor quality and availability of data on pastoral populations. It has shown that the dearth of information hinders effective development planning, while lack of appreciation of the economic contributions of pastoralism to national economies, suppresses public and private investment. The ecological basis for pastoralist production strategies, and the evidence for their comparative advantage has been discussed with reference to the role of pastoral mobility. The relevance of climate change to dryland communities has been outlined in order to inform the discussion of more 'local' impacts in later chapters.

[15] Eritrea, Ethiopia, Uganda and Tanzania have all prepared NAPAs and submitted them to the UNFCCC secretariat.

The following chapter provides a characterisation of the fieldwork area and respondent communities. It then sets out to situate the research in longer-term and larger-scale processes which impact on the livelihoods of respondents. The chapter also describes the main features of the Orma production system, natural resource management institutions, and some of the cultural practises of relevance to the study data. A full description of the methodological approach and methods utilised in the study and the relative strengths and weaknesses is also undertaken.

Chapter Three- Research Context and Methodology

3.1 Tana River District

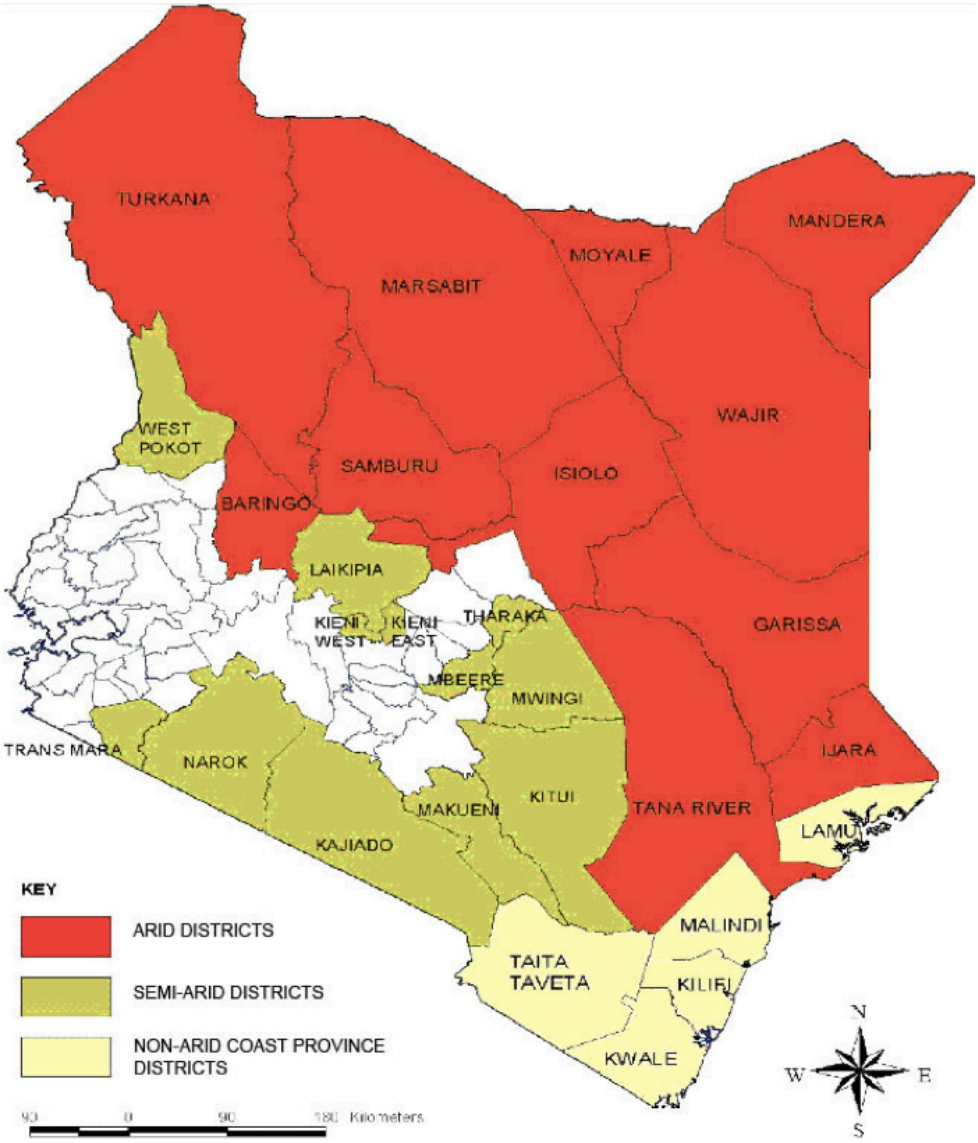
The research on which this thesis is based took place predominantly in Waldena and Tiltila sub-locations[16] in Tana River District (see figure 3.1). The district (39,000 km^2) is the fifth largest of Kenya's 46 districts and is inhabited by approximately 240,000 people (GoK, 2010a). The district lies between the equator and 3^o S, and longitudes 38^{o}30' E and 40^{o}15' E and is one of seven districts that make up Coast Province. Figure 3.2 shows the location of Tana River District as well as the other arid and semi-arid districts in Kenya. Table 3.1 offers a slightly different classification of district aridity based on a more stringent definition used by GoK (2007).

Of the three principal fieldwork areas in this study (Tiltila, Waldena and Kalalani), the area around Kalalani is the only area outside Tana River District. It is part of Kitui District (as depicted in figure 3.1) although it is widely believed to be part of Tana River District by respondents. The status of the area around Kalalani (as far west as Nyali) is controversial because respondents now largely regard Ormaland as synonymous with Tana River District. As such, if Kalalani is judged to be outside the District, this potentially has implications for the legitimacy of their claims to access the land. Considering these factors, it is therefore unusual that Kalalani is one of

[16] The administrative hierarchy in Kenya: Province, District, Division, Location, and Sub-location.

Source: Adapted from ALRMP (2009) by Clare Newman (2011)

Figure 3.1 Tana River District Map



Source: ALRMP.org

Figure 3.2 Kenya's Arid and Semi-Arid Districts

Table 3.1 Categorisation of Kenya's Arid and Semi-Arid Districts

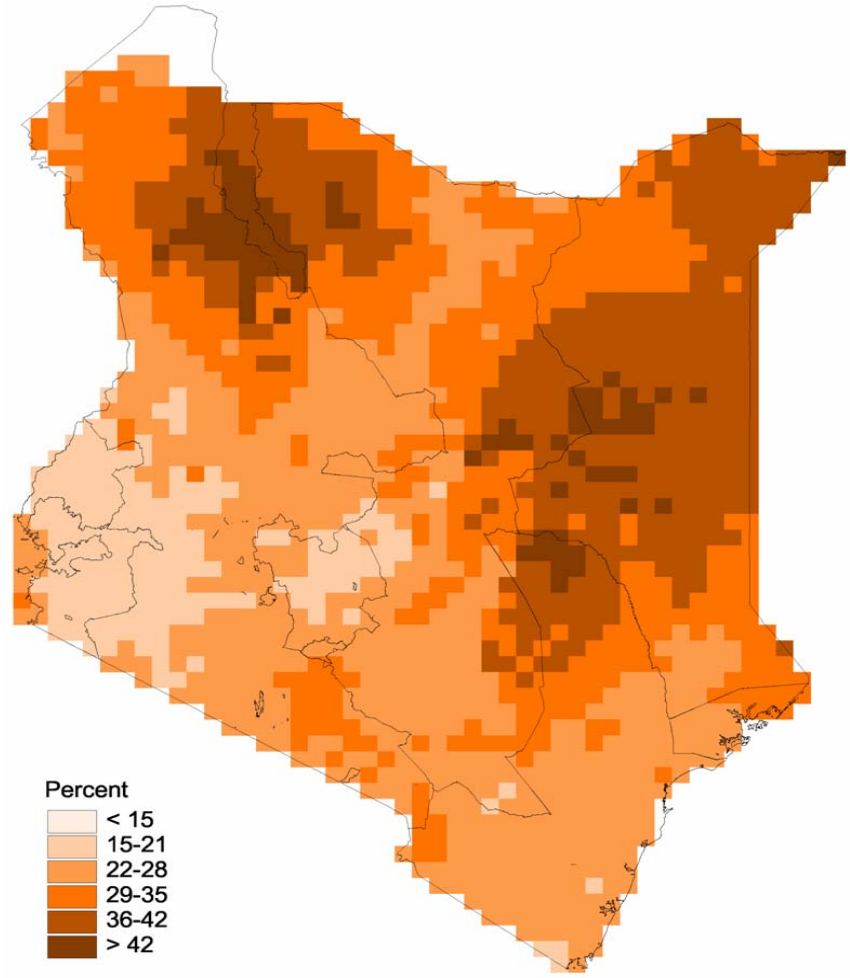
	Districts	% of Kenya's Total Drylands	Annual Rainfall
Arid (85–100% arid)	Turkana, Samburu, Marsabit, Moyale, Isiolo, Wajir, Mandera, Garissa, Tana River, Ijara	62%	200-550 mm
Semi-Arid (30–84% arid)	Kitui, Makueni, Taita Taveta, Kajiado, Machakos, Mwingi, Tharaka, Laikipia, West Pokot, Kwale, Kilifi, Baringo, Meru North, Lamu, Narok, Malindi, Elgeyo Marakwet, Mbeere	36%	550-850 mm
Dry Areas (10–29% arid)	Nyeri, Rachuonyo, Suba, Kuria, Thika, Koibatek, Migori, Bondo, Nakuru	2%	>850mm

Source: Ruto *et al.*, 2009

Waldena Division's official World Food Programme (WFP) final distribution points (FDPs), and that Kalalani Primary School was opened by the Tana River District Commissioner. It is likely that, due to the resource competition and resulting ethnic tension in the area, local government and the Kenya Food Security Steering Group (KFSSG) are adhering to ethnic boundaries rather than cartographic ones, in order to avoid a return to conflict.

There are seven divisions within the district, Garsen having the largest population, followed by Galole, Bura, Madogo, Kipini, Bangale and Wenje. The town of Hola, in Galole division, is the district capital. There is an absence of good quality district level maps highlighting division boundaries although figure 3.1 serves as a rough guide. The topography of the district consists of an undulating plain which is interrupted by low hills. The altitude ranges from sea level to 200m. On its eastern edge, the district is traversed by the River Tana. The Tana flows from the head waters on the eastern slopes of Mt. Kenya to the Indian Ocean, where it forms a delta that covers the lower part of Garsen and the entirety of Kipini divisions.

Rainfall in the district is low, bimodal and erratic. The mean annual rainfall ranges between 300mm and 500 mm. The district typically experiences large differentials in rainfall between various divisions, with the 'hinterland' (Bangale, Bura, Galole and (part of) Garsen divisions) receiving significantly less rainfall than the coastal areas (ALRMP.org). The inter-tropical convergence zone (ITCZ), which influences the wind patterns and non-seasonal air currents of the Indian Ocean, contributes to the distribution and amount of rainfall received in the district (Norton-Griffiths *et al.* 1975). The aridity of the hinterland in particular means that rainfall variability across the district is high, figure 3.3 illustrates the coefficient of variation for annual rainfall across Kenya.



Source: Adapted from Thornton *et al.* 2006

Figure 3.3 Coefficient of Variation of Annual Rainfall in Kenya in the Year 2000

3.2 History Of Tana River District

Tana River district has been one of the least developed Kenyan districts (in terms of poverty indicators, infrastructure and services) for decades (IFAD, 1990; Oxfam, 2009; Lewis, 1963). Besides factors like low population density and aridity, the reasons for this date back to European patterns of settlement and the Colonial Government's attitude to the Northern Frontier District (NFD) (Ngome, 2005). The absence of missionary activities in the NFD also contributed to a lack of education and health services compared to agricultural areas (Sifuna 2005). Tana River District was a *de facto* part of the NFD at its southern border (Arero, 2005, Lewis, 1963). The various ordinances put in place by the colonial administration effectively closed the borders of the NFD and restricted movement within it. These ordinances also applied to Tana River, Lamu, Kajiado and Samburu Districts (Arero, 2005).

The first such ordinance, the 'Outlying District Ordinance' was evoked in 1926 (Whittaker, 2008) and declared the NFD a 'closed district'. Any persons wanting to enter or leave the NFD had to seek the permission of the Provincial Commissioner (PC) who could issue a special pass (Arero, 2005; Lewis, 1963). In 1934 the 'Special Districts (Administration) Ordinance' (in combination with the 1933 'Stock Theft and Produce Ordinance') granted extensive powers to colonial administrators in the region. These included setting grazing boundaries, power of arrest, detention and seizure of property (Arero, 2005). Subsequent additions to the 'Stock Theft and Produce Ordinance' legalised the collective punishment of 'hostile tribes' for the offenses of their members (Arero, 2005). The cumulative effects of these ordinances was the political and economic marginalisation of the NFD for almost sixty years. Even today many of the constituent districts of the NFD are still official 'security zones' with an army or police escort being a government entry requirement. Tana River is one such district, although in reality persuasion or petty bribery can often circumvent the need for an official armed escort.

The colonial administration first put the NFD restrictions in place for a number of reasons. The history of Cushitic and especially Somali expansion in the region provided ample stimulus for tight control of border regions and suppression of political activity[17]. However, the uncontrolled natural resource conflict between rival ethnic groups of pastoralists was also perceived to undermine the governance of the British East Africa Company (Lewis, 1963), which provided further impetus to bring the district under tight control by the colonial administration. Prior to Kenyan independence, in an effort to minimise post-independence ethnic unrest, the colonial administration undertook the 'NFD Commission Report' (1962). Its aim was to establish the will of the inhabitants, in light of growing pressure from the Republic of Somalia, to support secession of the district[18]. Despite the Commission Report revealing that 87 percent of the NFD population favoured secession to the Somali Republic, in March 1963 Duncan Sandys (the Colonial Secretary) announced that the NFD was to remain part of Kenya (Whittaker, 2008).

The ban on political organisations within the NFD was lifted in 1960. The Northern Province Progressive Peoples Party (NPPPP), the Northern Frontier Progressive Party (NFPP) and the Peoples National League (PNL) emerged as the three main political parties although the 1961 national elections were largely boycotted by all NFD political parties (Lewis, 1963). As Kenya neared independence, the issue of Somali unification became a potent and sensitive political consideration for the emerging Kenyan state. Jomo Kenyatta believed that the secessionist movement had the potential to subvert domestic and regional political authority (Whittaker, 2008). The *shifta* insurgency movement was gathering pace under the banner of the 'Northern Frontier District Liberation Army' (NFDLA), and the newly formed Kenyan Government responded by rigidly enforcing restrictions in the NFD as well as leading frequent punitive expeditions into the district, confiscating and killing livestock as well as killing both men and women (Arero, 2005). The *shifta war*

[17] After clashes between the Somali Youth League and the district administration in 1948, all forms of political organisation were banned in the NFD (Lewis, 1963).

[18] Secession was strongly opposed by the Ethiopian Government because of the precedent it would set with regard to its own Somali territories (Lewis, 1963).

period is referred to locally as the *Daba* period or 'when time stopped' (Lewis, 1963). Within Galole Division (Tana River District), as in many other former NFD districts, there is a town called Daba which is reported locally to be the site of one of the many detention centers operated by the Kenyan Government during this period (Mburu, 2000).

By 1968 the *'shifta war'* began to wind down, with the restoration of diplomatic relations between Kenya and Somalia. Without the support of the Somali Government, the remaining rebels managed to maintain sporadic acts of insurgency until 1975 although by that time the boundary had become blurred between politically motivated insurgency and acts of banditry. In Tana River District, the term *shifta* now refers to any act of banditry by another ethnic group in pastoralist areas, although it remains a sensitive term because of its ethnic and political overtones. Many respondents recounted both fighting the Kenyan Government in the post-independence years and having livestock killed en masse by Government forces. The majority of those who actually fought were ethnic Boranas as opposed to Orma although many Orma reported migrating away from the conflict and losing livestock in government 'revenge attacks', as well as from the droughts that ravaged the district during the *shifta war* years. The result was that by the end of the *shifta war*, many pastoralists were left severely impoverished (Arero, 2005).

While the *'shifta war'* helps to explain historic under-investment in NFD districts, it also casts a long shadow which still colours the opinions and attitudes of city dwellers and power-brokers in Kenya today. The inhabitants of former-NFD districts are still excluded from popular conceptions of Kenyan nationalism. After this author had delivered a paper at an academic conference, an incensed Kenyan delegate was quick to point out that the Kenyan Government does not have any responsibility to those people who fought to join with another country, *"that area is a country within a country"*. The arbitrary nature of the national boundaries that were imposed by colonial powers in Africa have frequently ignited such conflict and resentment

(Niamir-Fuller, 1999). These perceptions continue to affect resource allocation to former NFD districts as well as skewing media coverage and representations of pastoralism in school curricula.

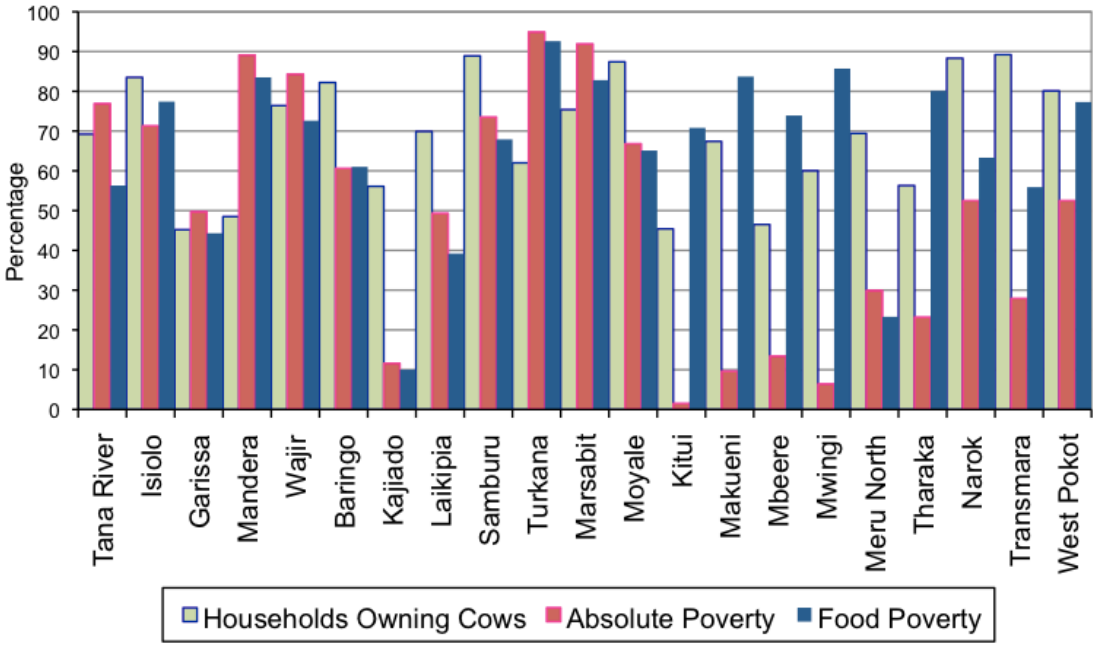
3.3 Tana River District- Present

Tana River District is inhabited by a number of different ethnic groups. The most populous ones include the Orma, Pokomo, Wardei, Somalis, Malakote, Munyoyaya, Wata, Bajuni and Mijikenda. The Pokomo, Munyoyaya, Malakote and Mijikenda, are involved in floodplain farming activities, while the Orma, Wardei and Somalis are predominantly livestock keepers supplemented with opportunistic cultivation (GoK, 2005). The Orma are resident almost exclusively in Tana River District[19], which compared to many of Kenya's other arid districts, has a wide diversity of livelihood and ecosystem types (Ruto *et al.* 2009). While the fertile Tana River floodplains and delta contain important dry season grazing areas for the Orma, it is regarded by the government as prime land for irrigated agriculture. The delta also generates significant tourism revenues due to its exceptional biodiversity (tanadelta.org). The presence of a significant, well educated and 'better-off'[20] population of cultivators, can be highly misleading when development and well-being indicators are aggregated at the district level (for comparison with other more homogenous arid districts). The routine aggregation of data at the district level results in Orma pastoralists being represented as having a better education and poverty status than would be the case if the data was disaggregated into production system or ecozones. The misrepresentation of pastoralist communities is further exaggerated at the provincial level (MOEST/ FAWE, 2000) due to Coast Province containing only one pastoral district compared to provinces such as Northeastern, in which pastoralism is the principal livelihood type in the entire province. Despite the presence of a large

[19] Orma are also present in several other neighbouring districts, particularly Lamu, although the overwhelming majority reside in Tana River District.

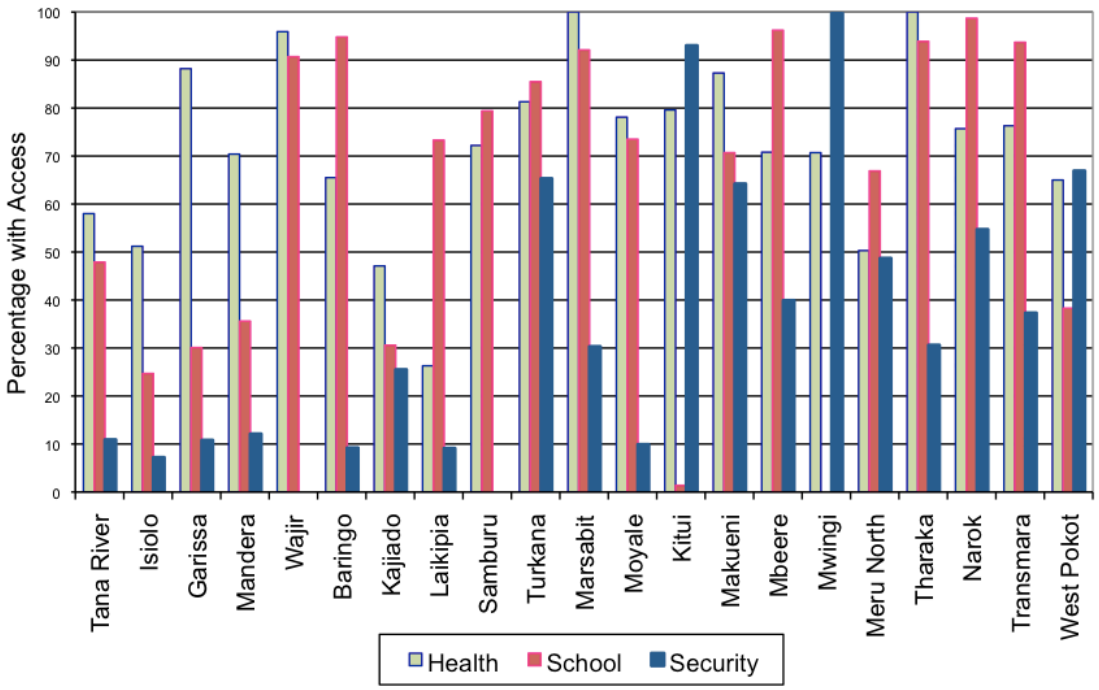
[20] 'Well-being' is a problematic concept. Using standard poverty and development indicators (i.e. UN Human Development Indicators) as a proxy for 'well-being' often results in an inherent bias towards settled agricultural communities due to the priority given to criteria like income, expenditure, and access to electricity and piped water, (Tache & Sjaastad, 2010). Such bias can create or exaggerate 'well-being' differentials between pastoralists and agriculturalists.

settled population and a significant tourism industry in Tana River District, the poverty levels (figure 3.4) and the relative access to health, education and security services (figure 3.5) compared to many other arid districts are extremely low (Oxfam, 2009).



Source: Oxfam, 2009

Figure 3.4 Poverty Levels and Livestock Ownership Among Pastoralists in Kenya's Arid and Semi-Arid Districts (2007)



Source: Oxfam, 2009 (Data from GoK, 2007)

Figure 3.5 Access to Health, Education, and Security Services in Kenya's Arid Districts (2007)

Tana River District's size and ecosystem diversity also means that when rainfall figures are aggregated at the district level, they can be highly misleading. Rainfall data is routinely collected by the Kenyan Meteorological Department at the division level, but it is aggregated at the district level before being utilised for planning purposes, despite districts being as large as 80,000km^2.

While the previous section examined the historical basis for lack of investment in Tana River District (in terms of infrastructure and services), the problems of appropriate data may help to explain the relative lack of development initiatives in Tana River District more recently. The Orma have received little attention in terms of development assistance in comparison with some of Kenya's other pastoral groups such as the Maasai, the Samburu or the Turkana (Irungu, 2000). This is commonly explained by the fact that the Orma represent a very small ethnic group. While the

Orma (66,275) are one of the smallest pastoral groups, they have received less attention from international development organisations than the Gabra (89,515) and Rendille (60,437) who have similar population sizes (GoK, 2010a). It is possible that security concerns associated with Tana River District have had a role in curbing the penetration of development organisations (Feinstein, 2010).

Using Lewis's (2009) data, Swift (2010) produced estimates for pastoralist population sizes. Table 3.2 compares these estimates with the actual population sizes from the national census results which were released in August 2010 (GoK, 2010b). The large discrepancies serve to reiterate the point made above, that data for pastoral areas is often highly unreliable. This can undermine efforts to plan development interventions effectively. Having been both witness to the process of data collection for the national census, and included in the census as an Orma pastoralist, this author regards the resulting data with a high degree of skepticism (although it does represent the most accurate population data available). Many Orma respondents reported no contact with census staff during the data collection process which is consistent with reports in the national media, e.g. *The Adventure of Counting Pastoralists* (Daily Nation, 2009a). This article was written by a census enumerator in Tana River District who struggled to locate pastoralists and openly admitted to "cooking the data". As a consequence of similar issues across Kenya, there were extensive census data irregularities[21] in eight pastoralist constituencies, for which the Government has decided to repeat the census (GoK, 2010b). However, despite the documented 'cooking' of data in Tana River District, none of its constituencies will be subject to a repeat of the census.

[21] Irregularities refers to rates of population increase inconsistent with birth and death rates, age and sex profiles which deviate significantly from the norm and other unexplained data inconsistencies (GoK, 2010b).

Table 3.2 Pastoralist Population Estimates Compared With Census Data (2009)

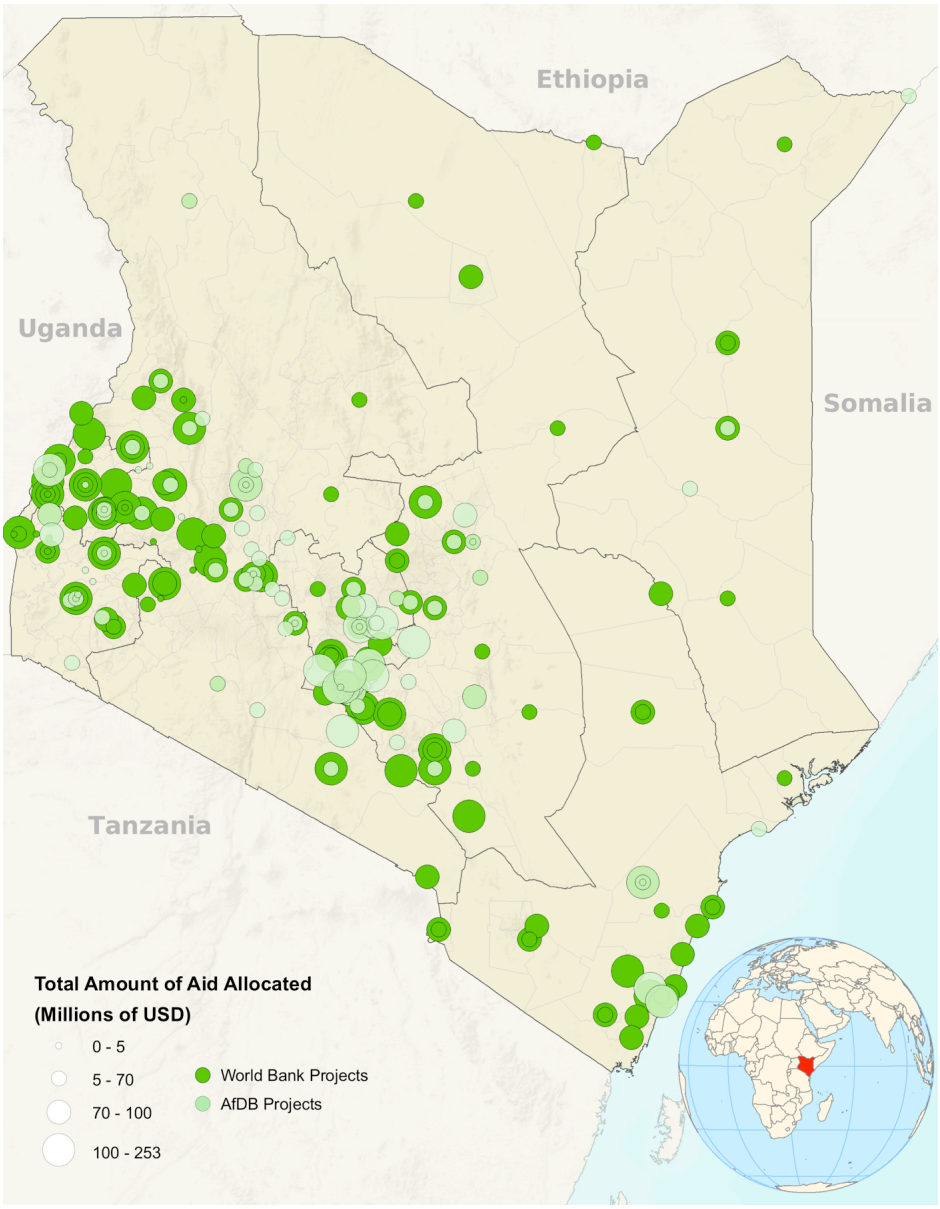
Language Group	Estimated 2010 Population Size	Actual 2010 Population Size
Boran, Orma, Gabra	176,000	317,189
Turkana	479,000	988,592*
Maa	749,000	841,622
Samburu	185,000	237,179
Rendille	44,000	60,437

* Data is subject to a recount due to census irregularities (discussed above)

Source: Estimates come from Swift (2010), actual population figures are based on the 2009 national census (GoK, 2010b).

Some of the most rapid increases in pastoralist populations have occurred in districts which host refugees or are home to cross-border ethnic groups, such as Turkana, Wajir and Garissa (Oxfam, 2009). It may be that in such districts, rapid population increases reflect the influx of refugees and migrating peoples rather than endogenous population growth. For these districts and for pastoral districts more generally, a case can be made for a more contextually appropriate system of population tracking if actual trends and dynamics are to be understood and factored into development planning (Oxfam, 2009). Based on the previous inter-census population growth rate (3.4 percent) for Tana River District (GoK, 2005), the estimated 2010 population in Galole division is 49,000. The census revealed an actual population of 60,866 which reflects an inter-census growth rate of 5.7 percent which is unusually high (GoK, 2010b). The extent of the population growth may represent the notable influx of ethnic-Somali pastoralists into Galole Division rather than population growth alone. Despite the rapid population growth in Galole, the district rate of inter-census population growth is only 2.87 percent, the discrepancy is unusual and may be linked to the widely reported census irregularities in the district (Daily Nation, 2009a).

The historic enmity between the state and Kenya's Cushitic/ Somali communities and the data problems described above, offer some insight into the current marginalisation of Orma pastoralists in Kenya (Irungu, 2000). As described in Chapter Two, pastoral areas consistently receive less investment and development assistance than agricultural areas proportionate to poverty levels. World Bank and African Development Bank (AfDB) aid flows to Kenya are subject to this distributional bias which exacerbates existing marginalisation. Figure 3.6 demonstrates this and highlights the extreme concentration of aid flows into the Mombasa-Nairobi-Lake Victoria corridor, contrasted with the relative absence of aid targeted at pastoral areas. Although, population concentration is much higher in the targeted areas, current aid flows do not represent effective or coordinated targeting of the most needy communities (Otieno & Colclough, 2009).



Source: Aiddata.org

Figure 3.6 Active World Bank and African Development Bank Project Locations

3.4 Orma History, Migration and Culture

Kenya's pastoralists can be divided into two language groups, Nilotes and Cushites. The Orma along with Borana, Somali, Gabra, Rendille and Dasenetch are Cushites (in the Afro-Asiatic family of languages). Nilotic speaking pastoralists (in the Sudanic linguistic family) include the Maasai, Turkana, Samburu, LChamus and Ariaal (Fratkin, 2004). Cushitic speakers are found in Kenya's north and

southeastern regions bordering Ethiopia and Somalia, the Orma form the most southerly cushitic group. The Borana are the closest ethnic and linguistic relatives of the Orma, and they both form part of the larger Oromo population which extends into southern Ethiopia (Kelly, 1989). The migration of the Orma to their present location in Tana River District is now believed to have been part of the greater Oromo expansion that began in 1537 in southwestern Ethiopia (Turton, 1975; Lewis, 1966). Previously it was believed (Lewis, 1960) that the Orma migrated into Somalia but were then pushed south by Somali pastoralists although based on linguistic analysis and various historic accounts, the consensus is now that the Orma migrated directly into northern Kenya from Ethiopia (Turton, 1975; Lewis, 1966).

In older literature the Orma are referred to as *Galla* or *Warra Daya,* and among neighbouring ethnic groups, as *Orma*, or *Wardha*[22]. The Wardei are believed to have taken their name from *Warra Daya* (Turton, 1975)*,* an older name for the Orma which is of Somali provenance (Besteman, 1999). This causes confusion as certain other pastoralist groups still refer to the Orma as *Wardha, Warra Daya* or a variation of this name. The term *Galla* is considered derogatory, particularly since the Orma's conversion to Islam in the 1940s/50s (Dahl, 1979). *Galla* is a word used by Muslims to refer to non-Muslims (much like *infidel* or *pagan).* Orma and Wardei communities have recently become engaged in conflict over grazing land in Tana River District.

Orma governance was based upon the *gada* (or 'age-set') system[23] until the 1930s when the Orma endured major human and livestock epidemics, and came under attack from both Somali and Maasai pastoralists attempting to gain control of their grazing lands (Dahl, 1979). Kelly (1988) convincingly argues that the combination of these events created conditions under which Orma conversion to Islam in the 1940s was hugely advantageous in terms of new opportunities for trade with Islamic

[22] The group that refer to themselves as Wardei, are Somali speaking pastoralists whose Orma ancestors were captured by Somalis during a period of conflict at the turn of the twentieth century, and assimilated into Somali culture (Besteman, 1999).

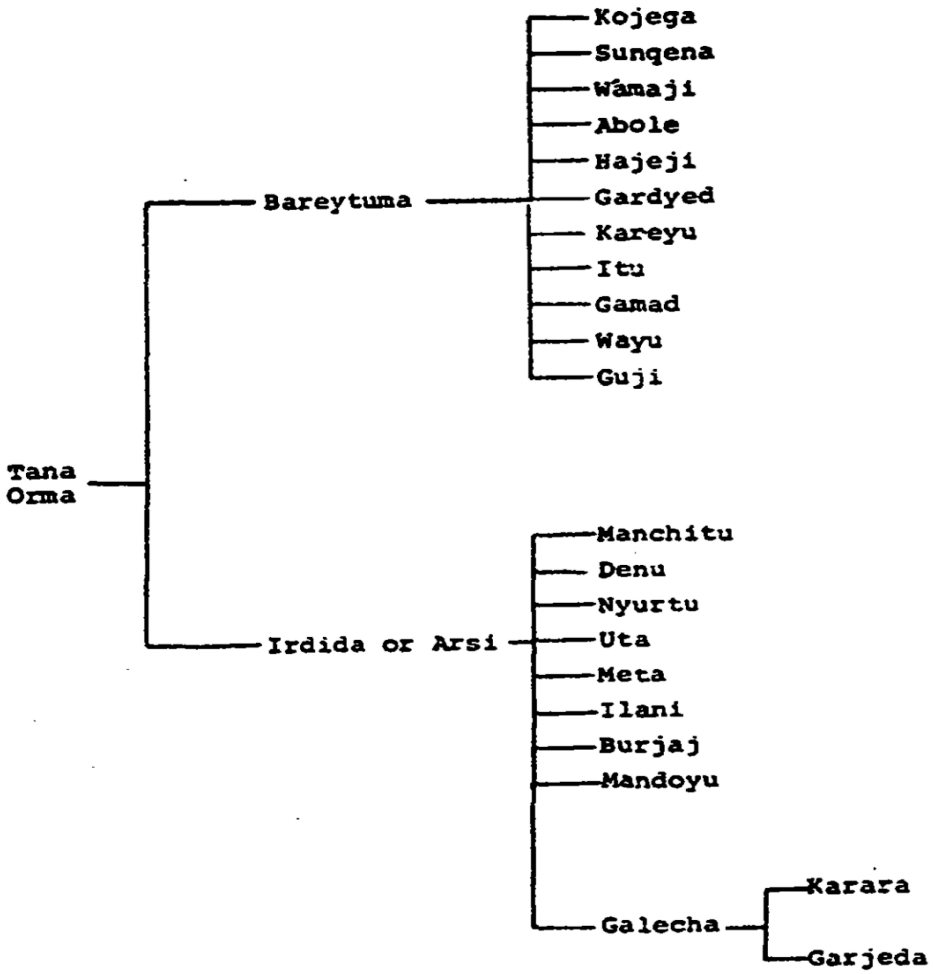
[23] See Legesse (1973) for a detailed description of the *gada* system.

Somalis and Arabs at the coast (after the severe loss of productive resources associated with the disease and conflict of the 1930s). Despite the decline in importance of the *gada* system (exacerbated by the appointment of chiefs by the government), there are important elements still in place although they are interwoven with both Islamic and national law (Kelly, 1988). The role of the *mangudo* ('elders') is still the principal decision-making institution in Orma society, both arbitrating disputes and making decisions on issues that will affect the wider community. The *Imams* (Islamic spiritual leaders), have relatively little power in the Orma social structure. Elders with the ability of *Ayan Dano* (the seeking of messages from the stars) are highly revered and their prophecies are the basis for planning important social and cultural activities (weddings, ear-notching ceremonies, sacrifices etc). These rituals are remnants from the ancient Cushitic religious system based on the worship of *Waq* ('Sky-God') which was at least partially surplanted by Islam during the nineteenth century (Lewis, 1963).

3.4.1 Orma Clans

The Orma are divided into two moieties; *Baretuma* and *Irdida*. Traditionally marriages take place between clans of opposite moieties, but this custom is not strictly adhered to today. Below is a schematic diagram (figure 3.7) from Schlee (1992) which illustrates Orma clan structure. Schlee's diagram is based on an amalgam of Werner (1914) and Kelly's (1979) data. Figure 3.8 represents the information on clan structure obtained as part of this study. There are a number of differences between the data sets. This may partially reflect the different locations of the studies and the association of certain clans with specific areas. Respondents typically had a patchy knowledge of clan structure. It is therefore possible that respondents were either not able to recall, or were unaware of the *Burjaj* and *Itu* clans, which appear in Werner (1914) and Kelly's (1979) studies. The same is true for the *Irabo, Wayole* and *Digalu* clans identified in the present study but not present in the earlier studies. Data on respondent clan affiliations presented in table 3.3 illustrates that certain clans were represented by only one household which suggests the likelihood of further missing clans. Three clans, *Wayole, Manchitu* and *Kojega*

were not represented at all in the sample but were identified by multiple respondents as Orma clans and thus included.



Source: Schlee (1992)

Figure 3.7 Orma Clan Structure Based on Secondary Data

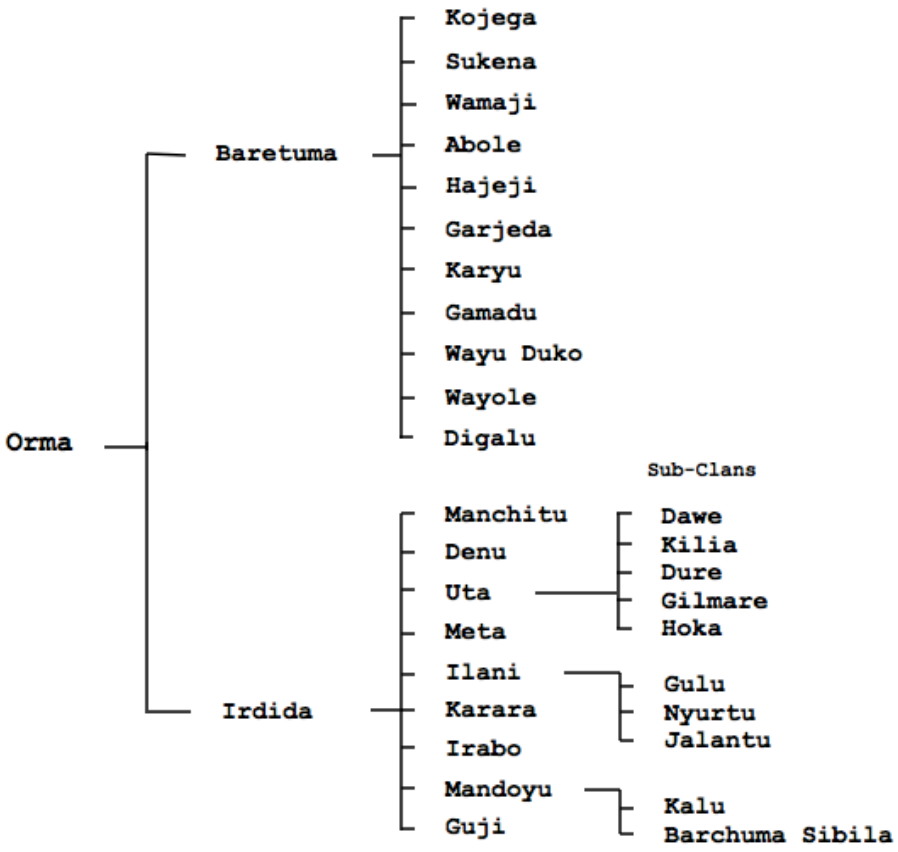


Figure 3.8 Orma Clan Structure Based on Respondents' Knowledge

Table 3.3 Orma Clan Representation in the Study Sample

Clan	Respondents
Ilani	28 (22.2%)
Kryu	23 (18.3%)
Uta	13 (10.3%)
Guji	11 (8.7%)
Mandoyo	10 (7.9%)
Meta	9 (7.1%)
Karara	7 (5.6%)
Gamadu	5 (4.0%)
Sukena	4 (3.2%)
Wayu Duko	3 (2.4%)
Garjeda	3 (2.4%)
Abole	2 (1.6%)
Denu	2 (1.6%)
Hajeji	2 (1.6%)
Irabo	2 (1.6%)
Digalo	1 (0.79%)
Wamaji	1 (0.79%)

Respondents from the *Guji* clan identified with the *Irdida* moiety despite Werner and Kelly's studies indicating an affiliation with *Baretuma.* This may be explained if the *Guji* clan affiliated themselves with the Orma at a relatively late stage (the *Guji* ethnic group is an Oromo group living in southern Ethiopia). This would make choice of moiety more arbitrary and potentially flexible, although no secondary data reliably substantiates this theory. It is, however, well established that among the larger Oromo ethnic group, clan identities can span across 'tribes' (Schlee, 1985). For example, the *Karyu* clan is well represented among both the Borana and the Orma and cannot be regarded as a tribe sub-unit as per the segmentary lineage model (Evans-Pritchard, 1940). Clan representation across tribes means that the expected

hierarchical relationship between clan and tribe is not always predetermined, particularly as a clan may be larger than a tribe.

3.4.2 Branding

Each clan has a specific brand, and each family augments this brand or uses ear-notching to denote individual ownership. Both the tool used for branding and the process, are referred to as *guba.* Large clans such as *Karyu* can have many brands. Herds always have a name, sometimes this can be literal such as *Maramandi* ('sweet') because of the reputed flavour of the meat. Often the name refers to the branding or ear-notching like *Mirmir,* which is the name of a *Karyu* brand that runs from ear to ear.

3.4.3 Housing

The Orma generally live in a *bula* (permanent settlement) or an *olla* (semi-permanent settlement) made up of between 3-20 families. *Ollas* fluctuate in size depending on factors such as rainfall, season, and security status. Unlike many pastoralist communities, the Orma frequently choose neighbours on the basis of friendship as well as clan, kinship and marriage ties. Orma *meen* ('houses') are constructed by the women using flexible sticks from pliable saplings of the *Danisa* tree. These are dug into the ground in a circle then bent into a complex lattice (photograph 3.1) which forms either a hemispherical (photograph 3.2) or beehive shape. Often there is also a central pillar adding strength to the roof. The frame has dried hides woven between the sticks and doum palm (*Hyphaena coriacea*) or grass mats[24] attached to the outside. Often this is supplemented by some form of tarpaulin or *gunia* (a Kiswahili word for grain sack) covering. A low and narrow door faces east and is covered with a thick curtain of bark fibre ribbons from the *Karadri* tree (Irungu, 2000).

'*Ilborua Wak hindabdu*' = *'East- God can't miss'*

Respondent 115

[24] The intricately woven doum palm mats are also used as mattresses and saddle-padding for donkeys.

Despite the religious significance of house orientation, several women suggested that the real reason they build houses facing east is so that the prevailing wind doesn't blow dust in through the door. Inside the houses, the first third/half is earth floored, the remainder is covered by hides or tarpaulin and seperated by a pole running along the ground. The left side of this area is for men and the right side is for women, although women remain on the earth floored area if visitors are present. Occasionally there is also a raised sleeping area constructed from flexible sticks. In the study area, the taller beehive shaped houses were rare and seemed to be indicative of a more settled lifetsyle due to the considerable amount of time, effort and resources required to build them. In contrast, the hemispherical houses are ubiquitous, being quicker to build, easier to transport, and less resource intensive. A more rudimentary version of a *meen* called an *igira* is constructed if settlement is to be short-lived (less than ten nights).

Photograph 3.1 Inside an Orma house with the proud architect

Photograph 3.2 A typical Orma house with various milk containers in the foreground

3.4.4 Productive Roles and Coming of Age

Orma boys are circumcised at 7-8 years old and are considered *makalas* (unmarried young men) from the age of 10-12 years. There is no prescribed age for marriage although respondents generally reported marrying at 18-25 years of age depending on the wealth of their fathers. Girls are typically married at 12-15 years, prior to which it is likely they will have been subjected to a traditional form of female genital cutting (FGC). After FGC girls are considered *gaaltam* (unmarried young women), this is a significant change of status and is frequently associated with school withdrawl. There have been concerted efforts to discourage the practise of FGC among the Orma. See for example, '*Campaign against female 'cut' bears fruit'* (Daily Nation, 2009b). However, claims concerning a dramatic fall in the number of cases in Galole Division are hard to substantiate. Based on conversations with respondents (including one particularly candid older woman), it is clear that the lack of anaethesia and poor sanitation associated with the proceedure, cause

excruciating pain and recurring infections for girls subjected to FGC. This echoes the appraisal of FGC in the secondary data which also emphasises a range of additional negative health consequences (CSA, 1995, Nour, 2003). Once married the couple will spend some time living with the bride's family before being released to live permanently with the grooms father. It is traditional for sons to live with their father until he dies, although in practise this is frequently not the case.

While women are responsible for many livestock related activities (milking; milk processing, storage and marketing; caring for young stock; gathering seed pods; administering veterinary medicine) and young girls often help with herding smallstock, herding is mainly a male activity. Children of both genders start helping their siblings from the age of 6-7 years, especially in lambing, kidding and calving periods. By the time a boy is 10-12, he is usually expected to take on regular herding responsibilities. Boys from poorer families may be sent to work for a more wealthy herd owner, in exchange for payment (normally one heifer per year). Paid herders are supervised directly by the herd owner and indirectly through their sons. Fathers progressively cede management of their herd to their sons while retaining ultimate control until their health or age precludes their active involvement. This is essentially a form of 'anticipatory' or 'pre-inheritance' from which daughters are excluded. While men are occupied by herd management, women's main activities are: fetching water and firewood; child care; cooking; cleaning; house construction; and livestock related tasks as noted above.

3.5 Orma Lifestyle

Mobile Orma families practise a form of transhumance. Each family has a 'home area' where they prefer to settle in the long dry season (June-November). Although mobile Orma respondents are referred to throughout the thesis as transhumant pastoralists, the unpredictable and changeable nature of household mobility in any given year, suggests that they could equally be defined as semi-nomadic. More southerly Orma living in *Chaffa* exhibit a more predictable transhumant pattern of

mobility, moving between the delta and the hinterland (Irungu (2000). Orma pastoralists primarily keep cattle (*lo'oni*), goats (*rayho*) and sheep (*olio*) but increasingly camels (*gala*) are being kept as conditions for cattle keeping deteriorate. Until the 1940s the Orma were predominantly nomadic, living primarily off the subsistence production of their herds (Ensminger, 1992). Settlement was forced upon them by the concurrent epidemics and conflicts outlined above. There is no accurate information available on the mobility status of the Orma at present although Chapter Four presents data for a sample of 144 Galole Orma which suggests that 51 percent are still at least partially mobile. The Orma are patrilineal and largely patrilocal as discussed above. Communities are broadly divided from north to south into several different areas that correspond to the seasonal rivers used by inhabitants in the dry seasons; *Hirmani, Dakaji, Komoli, Galole, Kokane* and *Chaffa*[25].

Orma livelihoods are intimately connected with the environmental context in which they live. As outlined above, rainfall in Tana River District is low and bimodal with high levels of inter-annual variability. In contrast with the majority of Kenya, the rains received in Waldena location in the middle of November are known as the long rains (*hagaya*). They usually last about a month and are followed by the short dry season (*bonhagaya*) at the end of December. *Bonhagaya* continues until the short rains (*gan*[26]) arrive in March/April, they normally last for a month or more, until the long dry season (*adolessa*) starts at the beginning of June. Occasionally *furmada* ('light rains') are received during the long dry season although respondents reported that this is increasingly rare. Respondents cited the month before the long rains as the hungriest month because livestock have no milk and cattle have often given birth. At this time livestock fetch a poor price at market and many respondents also reported that food aid often gets cut off at the start of the long rains, when the river floods and blocks the road (shops are also unable to restock). The first weeks of the long rains, before the grass has grown, were reported to be the worst for animal sickness.

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[25] *Chaffa* refers to the southern part of the district in and around the Tana Delta.

[26] *Gan* is the start of the Orma year and the word literally translates as 'year'.

Animals still have nothing to feed on and get cold in the rain which leads to pneumonia and other respiratory infections. Weakened cattle can get stuck in the mud, which normally results in some deaths through a combination of exhaustion and disease. The coming of the long rains is the most labour intensive time of the year and poorer Orma families frequently offer assistance to richer herd owners in exchange for milk in times of abundance.

Selling livestock to purchase food in shops during the dry season is a significant change in Orma consumption patterns from the almost pure subsistence observed 60 years earlier (Ensminger, 1992). Shopkeepers operate the only form of financial services available to Orma pastoralists in the form of store credit. Debts can be accumulated at the shop in the dry season, then a healthy animal is exchanged to cancel the debt once the pastures have grown in the long rains. Interest rates are high but the service has become indispensable for poorer livestock keepers in recent years. This represents one of a number of factors which contribute to a downward spiral effect for impoverished Orma pastoralists.

3.5.1 Water & Mobility

The Orma refer to pastoralists as *worr horia* ('people of livestock'). People or households that move are known as *worr godhana* or *worr dedha* and the practise of migrating is *godhan.* In the study sample, 51 percent of households were mobile (including 'split' families[27]). Water access during the dry season is almost exclusively from hand dug wells (*ella*) in the dry riverbed. The location and ownership of these wells is passed from father to son, and usage rights are prioritised for family, friends and members of the same clan. Wells are often owned by a group of men who co-inherited it from their fathers. The considerable work involved in digging and maintaining a well in very sandy soil, means that group ownership has significant advantages (Coppock, 1994). Wells are up to 10 meters deep and require up to 6 people working in relay to operate them. Sometimes a rudimentary ladder

[27] 'Split' families refer to multi-household families (multiple wives) whereby at least one house is settled while the others remain mobile.

(*gallo*) is used when the steps have crumbled. Digging deep wells can be extremely dangerous. Photograph 3.3 depicts a 'five person well' (the fifth person is not visible). Such wells regularly collapse and can bury people alive. Many respondents could name multiple people who had died operating or digging such wells. Both men and young women utilise deep wells, knowingly exposing themselves to considerable risk.

Reliable well digging spots are limited along the Galole River, a well dug no more than 10 meters away from a functioning well may yield either salty water or none at all. This means that during periods of high demand, well usage is tightly scheduled among their owners. In such periods, wells can be in use around the clock with non-owners only permitted to use the well during the night. For those who cannot water their animals, the surrounding area is effectively unavailable for grazing.

> *"Owning wells is like owning herds- they both have value"*
>
> Respondent 140

The water stored in natural dams[28] is important in extending the range of household mobility into areas too far from wells to be utilised in the dry season (except through the use of cattle camps, as discussed below). In an environment where rainfall events are patchy and unpredictable, knowledge of the existence of transient grazing resources and natural dams is of crucial importance in herd management.

> *"When it rains in daylight hours everyone can see there is rain that side, but if it rains during the night hours and you realise it- for that one you are not telling anyone!* [laughing]*"*
>
> Respondent 51

[28] 'Natural dams' refer to transient ponds or large puddles which store water following the rains.

Photograph 3.3 A 'five person' well in the Galole River

The effort required to mobilise the family may not be justified if the amount of rainfall is not sufficient to last at least a few days. The importance of strategically assessing rainfall and pasture resources when planning household and herd mobility,

is reflected by the rich Orma vocabulary describing the various sizes of dams. Depending on grazing resources, a typical family will remain settled until the water in a dam is exhausted. The duration of settlement possible from the different sized dams is indicated below:

Horra	Most of the year
Alango	3 months
Komorra	2 months
Ch'iita	1 month
D'abbasa	1 week
Konno	3-4 days
Dalano	1-2 days

There was almost complete consensus on the period of settlement possible depending on the size of the dam. This emphasises the importance of accurate 'reconnaissance' for pasture and water in Orma livelihoods. Respondents lamented the disappearance of elephants in the study area due to their surprising effect on natural dams.

> *"A long time ago when the elephants were around and the Somalis had not come, the elephants used to come and dance in the water of a konno, the water could be up to a man's waist- the elephants used to make the dams deeper* […] *KWS* (Kenya Wildlife Service) *rounded them up towards kungu* (national park) *many years ago"*

3.5.2 Outlining Orma Mobility

Orma mobility patterns follow a general cycle, although the system is characterised by high variability. In the study area households were usually settled near a well in the Galole River during the short dry season. When the first rains come, households migrate towards the new growth until rain falls in their 'home area'[29]. At this point households may return to their home area, depending on where they have settled. The advantage of returning is access to food aid and a slim chance of cultivation (if the river has flooded well, and if the family own a good *shamba* ('cleared field'). During

[29] A family's 'home area' is a location, or a number of locations, where the family routinely spends the long dry season.

the long dry season (once the standing water has been used up) households again settle near a well in the Galole River and graze their livestock on the best pasture within a one day round-trip. With the onset of the long rains households migrate towards fresh grazing, or remain settled if it rains in their home area. If their herd is large this generally necessitates more migrations to find fresh grazing. There were usually more migrations in the short rains because rainfall is less abundant and more spatially dispersed than in the long rains. This also means that cultivation is far more common following the long rains because the river floods more regularly and households are more likely to be close to their *shamba*.

This basic model of Orma household mobility, is typically augmented by the use of cattle camps. A cattle camp is referred to as either an *urane* or *gosse,* with older people favouring the former term and younger people the latter (*fora* is another word for cattle camp but was seldom used by respondents). Traditionally, cattle camps were used to give access to the best grazing for non-milking stock. Increasingly, however, the majority of a family's herd may be kept in a cattle camps for a significant part of the year because of poor grazing resources around increasingly sedentarised communities.

Cattle camps are herded by *makalas* who sleep outside in the *boma* ('corral'). Photograph 3.4 depicts one of the cattle camps visited by the author during the long dry season. The author pitched tent inside the livestock *boma* next to where the *makalas* slept (just out of shot). This was next to the heavily 'fortified' (1.5 meter high thorn tree branch fence) calf *boma*. Orma cattle can go three days without water which means they can be herded about 8 hours walk from the well to the *debichas* ('far grazing areas') where the cattle camps are located. They can graze for two days before being herded back to the well. A small number of calves are kept in the cattle camps and are brought water on donkeys. In this way adequate milk can be obtained to sustain the herders and the calves receive a good diet. Blood can also be taken

from cattle[30] when food is short in the dry season, or when one of the herders is ill in the cattle camp. Despite the fact that drinking blood is discouraged under local Islamic teachings, many respondents reported taking blood annually to give them strength.

An alternative dry season strategy utilised by a small amount of wealthy families, is to migrate with the whole family to the *debichas* with the cattle camps in the dry season. In this way, the family can continue to subsist from the production of the herd for as long as possible which minimises the need to sell livestock to purchase food. It is an incredibly labour intensive strategy, as water must be brought for the family, the calves, and smallstock, on donkeys (a 10 hour round trip). This strategy is highly efficient, in terms of maximising household production and subsistence consumption. It depends crucially on an adequate supply of donkeys, which in general seemed to be in short supply in the research area (resulting in a high level of donkey loaning).

[30] A *Dayya* ('small bow and arrow type tool') is used to extract blood from a cow. The process of extraction is called *Diga'idenni.* Up to two litres can be taken from each cow.

Photograph 3.4 Living with livestock in the cattle camps

An important endogenous resource management adaptation in terms of household mobility is the imposition of a restricted grazing area around primary schools in Tiltila and Waldena. The restrictions are intended to address the reduction of pastoral production which inevitably occurs when families settle on a permanent or semi-permanent basis. The protected dry season grazing zone is for the exclusive use of settled families with children at primary school. The grazing zones are known as *laf sera* which literally translates as 'restricted land', it is also informally referred to as *park* as it is viewed in the same way as other restricted areas such as national parks. In Tiltila, *laf sera* came into force in 1990, a few years after the school was opened. It followed a discussion by the elders concerning the depletion of grazing resources around the settlement and the resultant shortage of milk for school children. There is also a *laf sera* for Waldena primary school which was founded shortly afterwards. Ensminger (1992) suggests that the issue of milk for school children was a convenient reasons for the Orma to instigate a form of land privatisation in response

to the increasing presence of rival ethnic groups in the district. Around Tiltila, *laf sera* covers vast area with radius of in excess of 10km around the school[31]. Grazing livestock in *laf sera* is only permitted in the dry season by herds of no more than 20 heads. Cattle camp herds cannot graze *laf sera* and incursions by other ethnic groups are reported to the KPR (Kenya Police Reserve), who in concert with the chief and school committee, have the authority to issue a fine (up to KSh 5000) which is used to bolster school funds. Respondents frequently suggested that the level of the fine was not an adequate deterrent for rich livestock owners, and tensions in the area have been rising with a palpable unease where Orma and Somali wells are in close proximity.

3.6 The Orma Breed

The Orma cattle breed, referred to in the literature as the Orma Boran (Irungu, 2000), has received significant attention from animal scientists because of its trypanotolerance. Due to long-term exposure to a heavy tsetse challenge in the Tana Delta, the Orma Boran has acquired significantly more resistance to trypanosomiasis than the Boran or any other East African Zebu breed (Njogu *et al*. 1985; Dolan *et al*. 1994). Research has been underway since 1980 at the Galana Ranch in Tana River District, in an attempt to improve the trait (Clinch, 1990). There are also a number of morphological and physiological traits embodied in Orma cattle that contribute to the maintenance of production under environmental stress. A thick and movable hide of high vascularity combined with a large dewlap facilitates thermoregulation (Krätli, 2008), as does a high concentration of sweat glands (Nay & Hayman, 1956). A slender and agile body high from the ground assists movement through difficult terrain (Krätli, 2008). A low fasting metabolism means that a positive nutritional balance can be maintained while feeding on poor quality or a low quantity of feed (Scoones, 1995). Metabolic rate can also be adjusted quickly by zebu cattle, to ameliorate the negative effects of heat stress or inadequate nutrition (Frisch &

[31] This would give an area of over 300 km^2, although the actual perimeter of *laf sera* proved very difficult to establish, due to inconsistencies in respondent estimates.

Vercoe, 1977). Zebu cattle also regain weight quickly following improvements in nutrition (Western & Finch, 1986).

There are also a number of non-genetic factors, as described by Jablonka and Lamb (2005), which are socially transmitted among cattle (while also being intertwined with innate behaviour). Feeding competence is one such example, whereby knowledge is acquired by younger herd members by mimicking their mother or other influential animals, who may have been through the risky process of learning through post-ingestive experience (or inherited the knowledge in the same way). Another type of behavioural non-genetic inheritance is the timing of feeding and resting, the exploitation of available shade, and negotiation of difficult terrain. All of which can improve productive performance and survival (Krätli, 2008).

3.6.1 Trait Preferences and Selection

Respondents reported that livestock trait preferences have diversified over time. This has been motivated both by the changing climate and the demands of the market, which has shaped the appearance and productive traits of cattle in particular. Ensminger (1992) observed that the ability to put on weight quickly in the wet season had become an important selection trait as a consequence of increasing involvement with the market economy. This corresponds with a general trend described by respondents. However, the notion that Orma pastoralists are willingly sacrificing traits which confer drought hardiness, is counter-intuitive in a highly variable environment (Scoones, 1995). Respondents in the current study described a duel selection strategy.

> *"There are two types of cattle, one is small but with enough milk- we keep the bull of the small one because during the dry season these ones don't die quickly. The other one is big and has milk but it is not good in the drought. Bulls fight in the urane* [cattle camp]- *the strongest one impregnates many. The smaller bull can be left in the village. One bull in urane and one in the village so that both can impregnate. We tie up the bigger bull by the horns when both bulls are together"*
>
> Respondent 68

"The bulls in my herd are from the first animals from our fathers so I know the mother of the mothers. There are 10 bulls and 300 cows in our herd together with my brothers. Some bulls give offspring that are big and good for meat and other bulls give offspring that are smaller but give good milk"

Respondent 79

These responses are typical of the value placed upon drought hardiness among Orma pastoralists in the study sample. Purely market-orientated production is not an option for the majority of households. For wealthy households, sacrificing milk production for higher beef prices is a good trade-off, as production above subsistence requirements (in the absence of a lucrative market for milk) is inefficient. However, when drought hardiness drops below a certain level, this increase in profits will no longer off-set the risk of significant stock death in a severe drought. For less wealthy households, the gains from purely market-orientated production are marginal compared with the enhanced likelihood of total herd loss and the risk of destitution associated with drought events.

Maintaining a drought hardy bull as well as a bull producing more marketable offspring, represents an effective hedging strategy for medium and high wealth households but may represent a progressive loss of adaptive traits. The shift in trait preference can be conceptualised as an adaptation of the production system in response to the growing need to engage with the market to realise the multiplication afforded by conversion of meat to grain (for all but the most wealthy families). This has become necessary due to a range of factors, including the increasing prevalence of drought and the corresponding inadequacy of subsistence production to provide the minimum calorific requirements of the household.

3.6.2 Goats & Sheep Breeds

Trait preferences were very similar for goats in that respondents prioritised drought hardiness and milk production. Breeding males were selected according to milk

production, drought hardiness, and size, although beauty was also frequently mentioned. There appeared to be less morphological variation among the Orma's black head sheep and no selection or breeding control was evident. Respondents believed sheep from the Wajir area to be the most hardy.

3.6.3 Orma Species Diversity

Herd maximisation is an important management strategy employed by respondents, which enables them to capitalise on transient resource availability and minimise the risk of total herd loss in drought years (Gamba, 2005). In tandem with this strategy respondents also kept multiple species of livestock which increases the flexibility of the production system in a number of ways. It can generate a wider variety of livestock products which are dispersed across different seasons. It also facilitates the harvest of more of the available vegetation. Introducing smaller species increases asset liquidity and the availability of meat. Diversity of disease susceptibility and ability to cope with drought and floods also reduces the risk of major herd losses. In addition to these benefits, respondents also stressed the non-productive aspects of different species such as the cultural significance of cattle and the medicinal properties of sheep oil, as well as the role of sheep in sacrifices due to their 'strong star'. Despite these many advantages, respondents reported that keeping of sheep and goats was a marginal activity prior to the 1980s. The drought of 1984 was specifically mentioned as the point when sheep and goat keeping assumed a more important role in household asset holdings, as they struggled to rebuild livestock numbers.

Camel keeping is not a traditional Orma activity although respondents did suggest that they had been used as a means of transport in the past. Ensminger (1992) states that, "camels are completely absent from Orma livelihoods". Although respondents rejected this assertion, it does indicate that camels were at least rare at the time of that study. In the current study 17 percent (24/140) of respondents reported owning camels. The consensus being that many Orma sought to purchase camels after 1984 when on average 71 percent of cattle and 64 percent of sheep and goats perished

(based on a sample of 63 and 45 respondents respectively). Respondents frequently cited the fact that many camel owners were relatively unaffected by that drought, as their primary motivation for diversification. The Orma have learnt camel husbandry from Somalis either directly by settling in proximity to them, or indirectly from their children (who herd camels for Somalis). However, Orma knowledge of camel husbandry is patchy and Somalis are still consulted regularly on camel diseases and treatments. Respondents reported camels suffering from a wide range of diseases they were not familiar with, particularly in the wet season when biting flies are present. The Orma forerunners who started to keep camels in the early eighties had to overcome considerable opposition to their consorting with Somalis.

> *"After 84 I started swapping heads for camels with Somalis so that if another drought comes we will survive. We stayed with Somalis for three years to learn husbandry. I was fined one camel by the mangudo* [elders] *for befriending Somalis"*
>
> Respondent 44 (high wealth)

Although fines were reported by multiple respondents, the norm seemed to be informal disapproval expressed in community meetings. Due to the fact that Orma who adopted camel keeping were generally wealthy, the fines seemed to be more symbolic than punitive.

3.7 Alternative Food and Income Sources

In order to complete the picture of Orma livelihoods outlined thus far in this chapter, the following section looks at the prevalence of alternative forms of food production and income generation undertaken by respondents. Increasing numbers of pastoralists are engaging in opportunistic cultivation. While this is not new, falling herd sizes and increasing settlement among pastoralists is making it an activity with low opportunity cost for the least wealthy families. Cultivation in the study area is almost exclusively based on the flooding of the Galole river. As soon as the flood waters have receded, respondents plant maize in *shambas* that line the river bank at

the start of the long rains. From a total of 121 respondents, 85 percent reported 'owning' a *shamba* which they could cultivate if they are by the river when it floods. Cultivation was highest among low wealth families (92 percent) and lowest among high wealth families (80 percent) which probably reflects the lower opportunity cost of the labour of less wealthy families and their higher levels of settlement (discussed in the following chapter). Based on respondents previous 5 years experience of cultivation, on average respondents were able to harvest a crop every 2.4 years. A 'good harvest' was defined as over 10 bags of maize (50kg bags) and was received by respondents on average every 3.6 years. When respondents were asked about the main constraint to cultivation, 48 percent cited lack of rain/ floods, and 36 percent cited the destruction of their *shamba* by the El Niño event of 1997 which created *bak'attu* (deep channels/gullies) that cause high levels of run-off which prevents the soil saturation required for floodplain cultivation. Photograph 3.5 shows a *shamba* roughly 400 meters from the Galole River, which is severely affected by channeling.

Respondents reported that during their own childhood, over 56 percent of their parents had never cultivated a *shamba*. The increasing numbers of families investing seed and labour in cultivation along the Galole River, is likely to reflect falling herd sizes and increasing settlement, over the course of a generation (Ensminger, 1992).

Table 3.4 shows the alternative income generating activities engaged in by respondents. The majority of these activities are supplemental to livestock keeping. The following section describes the methodological approach utilised in this study, including an exposition of methods and challenges encountered in the field.

Photograph 3.5 A large channel in a *shamba* caused by the el niño rains

Table 3.4 Income Generating Activities of Orma Pastoralists

Activity	Number of Respondents
Livestock keeping, and herding only	83
Shopkeeper/ Small non-livestock trade	17
Livestock trade	12
Carpenter/ House builder	9
Kenya Police Reserve	4
Remittances	4
AIC Watchman	4
Madrasa teacher/ *Imam's* assistant	3
Community nursery teacher	2
Labourer	2
Traditional doctor	2
Councillor	1
Hunting (illegal)	Unknown
Overall	143

3.8 Methodology

3.8.1 Overall Approach

The aim of this research was to understand the constraints and opportunities faced by different sections of Orma society and how these interact with cultural, political, economic and environmental considerations to determine household decision-making and livelihood strategy. In order to achieve this broad perspective, a people-centered methodological approach was utilised. A

conceptual framework was required in order to assist the structuring of various livelihood components. The Sustainable Livelihood Approach (SLA) was chosen as a starting point to structure the data as it emerged in the field, with the intention of developing a more context specific theoretical framework during the analysis of data. The research was conceptualised as a socio-economic study encompassing both qualitative and quantitative data. As such, the SLA fits with the research approach, being structured around the policies, institutions and processes which shape peoples access to various forms of capital[32], and how capital (or assets) are utilised in the pursuit of different livelihood strategies (Carney, 1998). Drawing on the work of Chambers and Conway (1992 p.4), a livelihood is defined as comprising 'the capabilities, assets (including both social and material resources) and activities required for a means of living'.

The social capital element of the SLA constitutes another specific compatibility with the research agenda. Social capital is afforded equal status to other more tangible forms of capital. Understanding the role of social capital in pastoral livelihoods is particularly important as it can often be the most stable of family assets (Krätli & Dyer, 2006). Livestock forms the most significant category of physical capital in pastoral livelihoods, constituting the main livelihood resources for pastoralists to satisfy their social, economic and consumption needs. Livestock generate other forms of capital by building social alliances, storing wealth, and providing cash through the sale of livestock and related products (Oxfam, 2009).

> *"A livelihood is sustainable when it can cope with and recover from stresses and shocks and maintain or enhance its capabilities and assets both now and in the future, without undermining the natural resource base"* (Chambers & Conway, 1992 p.6)

[32] 'Capital' is broken down in the SL approach into: social capital (networks, trust, reciprocity); human capital (education, skills and health); physical capital (livestock, roads, tools etc); financial capital (cash, access to credit, saleable assets etc); and natural capital (land, water, vegetation etc) (Carney, 1998).

This quote from Chambers and Conway (1992) highlights the sustainability element of the livelihoods approach which effectively incorporates the concept of resilience[33] which is a key concept in the following chapter.

Throughout this thesis, reference is made to Orma 'communities' so it seems appropriate to comment on the problematic concept of 'community'. There are varying and contested meanings of the notion of 'community', whether 'community' is defined in terms of geography or in terms of common interests and identities. This leads into a discussion of the concept of 'identity' itself, a concept which is no less problematic. There are definitional problems with the concept of 'community', which has long been recognised for its slipperiness (Mayo, 2000). As Stacey (1969 p. 134) commented, 'It is doubtful whether the concept of 'community' refers to a useful abstraction'. Historians, anthropologists and sociologists have all used the term in very different ways, drawing upon competing theoretical perspectives. In the entry on 'community', in his collection *Keywords*, Raymond Williams (1976) identifies only one common thread in these competing definitions, that community tended to be used as a 'warmly persuasive word'. Insofar as this has actually been the case, it may at least help to explain the popularity of the term with contemporary policy-makers, despite the range of critics who have challenged its continued usefulness (Mayo, 1994). The concept of community in the proposed research has elements of geography and identity, it is used to loosely describe an aggregation of pastoralists at a larger scale than the household or extended family. Under this definition, communities are bound together by ethnicity, cultural practises, social capital and common use of the same productive resources (i.e. land and wells).

3.8.2 Development of the Approach

The SLA contains elements of the 'basic needs approach' (Maxwell, 1998), 'integrated rural development' and 'farming systems research' as well as 'participatory' approaches to development. Analysis of the linkages between

[33] Resilience is defined as the ability of the system to bounce back when confronted with an unexpected shock (Bayliss-Smith, 1991).

people's access to assets and livelihood strategies goes back to the literature of the late 1980's (Moser, 1998) on people's coping strategies in response to seasonality and famine (*cf.* Corbett, 1989; Davies, 1989) and on the role of entitlements and assets in these coping strategies (Sen, 1981; Swift, 1989).

In the same way that these older conceptual frameworks (or 'approaches') began to be regarded as part of the reason why development was falling short of its goals, the methods that went along with them were also starting to be viewed critically. During the 1980's, formal surveys in particular began to come under increasing criticism (Casley & Lury, 1981; Mukherjee, 1993; Chambers, 1983, 1992, 1997). The structure and limited flexibility of questionnaires was viewed as both an inhibitor to dialogue and as a representation of external (i.e. Western) cultural paradigms (Mukherjee, 1993; Swanson *et al.* 1997; Misturelli & Thomson, 2000). There were also concerns that the illiterate were precluded from participating because of the format of the interview, and the use of technical language. This contributed to the widely held belief that the opinions of communities and individuals were being falsely represented. It was suggested that participatory tools or methods could provide a better representation of 'reality' as perceived by rural people (Heffernan, 2003).

In this study, it was not possible to adopt a fully participatory approach whereby Orma communities were involved in the process of research design. The rigid nature of PhD proposal and transfer papers, in terms of defining research objectives and design prior to engagement with the research participants, undermines any claims of true participatory research. While there are clear practical reasons why a rigorous review process is required prior to students entering the field, it does preclude the participation of research subjects in a key stage of the research process. This also limits the preparedness of the researcher, particularly in the context of the current study, where secondary data is sparse and potentially unreliable. The necessity to formalise the research agenda in advance

also diminishes any sense of ownership of the research on the part of participants. Despite these limitations, the research objectives and design were left as broad as possible in the transfer paper. The research agenda was modified substantially after an initial period of engagement with the Orma. There were several shifts of focus that took place over the author's first months with the Orma. The most significant was an increasing focus on education and food aid. The former had initially occupied a marginal position in the overall research agenda, the latter had been completely absent due to scant mention of it in the secondary data. These themes largely replaced the initially proposed research theme (animal genetic resources), which subsequently occupied a marginal position in the overall research. All of the thematic shifts that occurred in the field were a reflection of the perceived importance of these issues by the Orma themselves, and the author's emergent understanding of the key issues in their livelihoods.

Ultimately, the process of adapting research objectives and design in the field, resulted in a dataset which broadly reflects the most important livelihood constraints facing the Orma. However, respondents' participation at an earlier stage would have allowed a greater degree of planning and research into issues unfamiliar to the author at the outset.

3.8.3 Making Contact & Seeking Permission

Having first learned about the Orma in early 2007 from Professor John King, it was not until October of that year that I undertook the first of two periods of fieldwork with the Orma. In the interim I completed my PhD transfer paper which focused on the adaptation of the Orma's cattle breed and its role in Orma livelihoods. My initial period of fieldwork commenced in October 2007 although I did not reach Tana River District until mid-November due to time spent in Nairobi acquiring a research permit and a 'reliable' four-wheel drive vehicle (with a budget of £2,500 sterling). During the first three month research period I had my first contact with the Orma and by November had secured permission to conduct my research from the Orma *mangudo* (elders) as well as the District

Commissioner's office and the District Livestock Extension Service. I had also retained the services of an interpreter who proved to be one of only two fluent English speakers in the Tiltila area. I was invited to live with my interpreter's family in Tiltila village (between numerous 'tours' of mobile settlements and cattle camps, during which time the 'research team' lived in my tent). My 'host family' integrated me into their social networks, which proved to be an invaluable resource in building trust in the community and arranging initial interviews. I was advised by the sub-chief and by my interpreter, that I needed to employ one of the Kenya Police Reserve (KPR) if I intended to travel on foot as widely as I planned. KPR are members of the community who are issued with rifles and ammunition by the government as a form of civil defence force.

The only significant period of disengagement from the field (for more than a few weeks) occurred following the presidential elections at the end of 2007 and ensuing post-election crisis, which continued until the 28th of February 2008 when the PNU-ODM power sharing agreement was signed. Following this hiatus, I undertook the bulk of the fieldwork which lasted until September 2008, with a break of a few weeks in June in order to disengage from the field and take stock of progress. As Bechhofer and Paterson (2000 p.99) state, regarding spending extended periods in the field:

> *"It can be all too engrossing, it may over-absorb us so that, as we relax and over-identify, we cease to be able to observe and analyse and make the appropriate comparisons critically. This is a familiar phenomenon, and many expert fieldworkers have stressed the need to leave the field from time to time, to disengage."*

Upon returning to Ormaland my critical engagement with the research was significantly rejuvenated. In retrospect, I had also been suffering from exhaustion having lost over a stone in weight over a period of three months (the decision not to bring a belt is now considered a key methodological flaw!).

3.8.4 Sampling & Defining The Research Area

Initially I planned to work with the community living in and around Waldena Location and over the border in Kitui District (in the case of families orbiting settlements between Waldena and Kalalani, (see figure 3.1)). While mobile and partially settled Orma *ollas* (settlements) were often some distance from these settlements (depending on the season), they could be identified as a coherent group based on their dependence on the Galole River in the dry season. The research focused on a group of overlapping mobile communities. The definition of a distinct study population was impractical due to significant levels of household mobility. The study population was consequently defined based on a 'study area', within which I attempted to interview as representative a sample as possible.

The research area consisted of a roughly 25km area around Tiltila settlement, a 25km area around Waldena settlement and all territory between Waldena and Kalalani settlements 25km either side of the Galole River. All journeys were made on foot, the vehicle only being used to get from Hola to Tiltila, and to travel from Tiltila to Waldena and back on a handful of occasions. A 'snowball' sampling technique (Biernaki & Waldorf, 1981) was utilised in the absence of any other method of making contact with participants. Selecting a random sample was not considered possible within the time-frame and resources of the study owing to the difficulties of working with a mobile and scattered population. In terms of achieving a representative sample, certain categories of respondent were much harder to make contact with than others. Both wealthier and more mobile respondents were often busy or unwilling (particularly for the first month of the research) to give an hour or even half an hour of their time.

3.9 Methods

Semi-structured interviews were the main method used in the field. Compared to formal interviews, semi-structured interviews allow more freedom and create a

more balanced communication between the interviewer and the respondent. The quality of data produced during the exchange is also 'richer' and more conversational. One of the limitations of semi-structured interviews is that differences in the question wording and sequence may reduce the comparability of the results (Heffernan, 2003). Group bias was another methodological constraint, particularly for interviews conducted in permanent settlements. While every effort was made to select a quiet and private area in which to conduct the interview, there were frequently a number of other people listening and contributing to the discussion. More sensitive themes are difficult to discuss in a group situation (income sources and herd loss, for example), and unequal power dynamics can remain hidden (Mosse, 1993, 2001; Cooke, 2001). To an extent this should be negated by prolonged engagement with the community, which facilitates an embedded understanding of societal structure and power dynamics. However, in a group setting the poorer and more marginalised may feel intimidated by the pressure of having to express opinions in front of those of a higher social status (Mosse, 1993, 2001; Parpart, 2000; Kapoor, 2002). However, an awareness of the dangers of relying on unverified data, generated in group situations, allows group interaction to inform the researcher on the process and issues involved in reaching consensus, particularly regarding local institutions and community-based management of resources, which rely heavily on group coordination and consensus building (Ensminger, 1992). In the current study, the risk of group bias was reduced by minimal use of orchestrated 'events' whereby respondents of dramatically different social status are brought together artificially.

3.9.1 Characterising Interviews

Interviews usually lasted between 30-45 minutes although sometimes considerably longer. The vast majority of respondents had never been interviewed before (94.9 percent). Due to the semi-structured nature of the interviews, themes varied considerably between interviews although there was a number of 'core themes' (that emerged during the early interviews) which were covered to some degree in almost every interview. While the 'core themes' formed the broad focus

of most interviews, data regarding specific aspects of a respondents' livelihoods were not always possible to establish (as discussed above). Equally the discussion sometimes focused on an area of particular expertise, knowledge or interest, on the part of the respondent, such that other thematic areas were neglected. This conversational approach enriched the data and introduced new themes to the research (such as the expropriation of grazing land for biofuel production, covered in Chapter Seven), as well as building rapport and trust with respondents. These advantages came at the expense of a consistent sample size for all thematic data analyses.

The location for interviews varied but wells were found to be particularly fruitful for encountering a wide range of herd owners. Due to the location of wells (in dry riverbeds) there was always adequate shade. More wealthy herd owners could watch their *urane* ('cattle camp') herd being watered and assess their condition (the reason for their presence at the well) while still participating in an interview. Another good location was at homesteads in temporary settlements in the early evening after the livestock had returned from grazing and been milked and put into the *boma* (corral). Generally, interviews in settlements were more problematic due the presence of more distractions and people 'listening-in', which made certain questions more sensitive (e.g. herd size). Interviews typically began with a brief outline of the research followed by a few questions from respondents. Normally the discussion would develop quite organically until such a point as the author felt it appropriate to direct the discussion towards areas of specific relevance to the study.

3.9.2 Wealth Ranking and Sample Representativeness

Anderson & Broch-Due (1999, p. x) argue that "poverty does not come with a single definition that can be easily detected through standardized indicators and measurement." In pastoralist societies, livestock are so fundamental to survival that herd size is typically a direct correlate of both wealth and status (Swift, 1986).

Among Boran pastoralists, cattle have been shown to account for well in excess of 90 percent of wealth (Desta & Coppock, 2002). Instead of attempting to quantify 'well-being' indicators in order to categorise respondent families' wealth status, an asset based approach was adopted. Through initial discussions with my host family, it became clear that Orma families were pursuing different livelihood strategies based principally on their asset holdings. For this reason, the author attempted to utilise a wealth categorisation system which mirrored these local conceptions of poverty as closely as possible. It was hypothesised that if wealth categorisation had 'internal validity' (Denzin, 1978), it would be more useful in identifying patterns of behaviour, and interpreting relationships between key livelihood components. It subsequently emerged that allocation of food aid by the community also followed these local categorisations of poverty which serves to legitimise the wealth categorisation used in this study.

During the wealth ranking exercise it was apparent that local conceptions of poverty focused on per capita herd size rather than 'absolute wealth'. The existence of alternative income sources (for example, ownership of a shop or business) was also taken into consideration in categorising families. The concept of 'social capital' (Carney, 1998) was well understood by respondents and key informants, although it was not explicitly incorporated into the asset-based wealth ranking exercise. In order to assess the importance of social capital in pastoralist livelihoods, key informants were asked to give a measure of social capital for each family, separate from the asset-based wealth ranking exercise. While this process stimulated some very interesting discussion on the nature of social capital and some of the reasons for its decline in Orma society, it proved difficult to get sufficient independent consensus between sets of key informants (chosen based on their knowledge of the community), to use the measure for any practical purpose.

A total of six community-based wealth ranking exercises were undertaken. Each of the three research areas (Tiltila, Waldena and Kalalani) were subject to two wealth

ranking exercises by two different sets of key informants (in order to provide some verification of the information). It was anticipated, based on other detailed studies of pastoralist perceptions of poverty (*cf.* Taches & Sjaastad, 2010) that multiple wealth categories would be identified based on a continuous asset distribution. However, it emerged from initial discussions concerning community conceptions of wealth, that there were three broad categories that could be identified. A wealth ranking exercise was conducted at the halfway point of working in each research area, such that the representativeness of the sample could be assessed. Any skew in the sample could then be corrected by targeting subsequent interviews at respondents of a particular wealth rank. The wealth ranking exercise was then undertaken with a second set of key informants (incorporating the most recent interviews) before moving on to the next research area. Overall, 137 respondents could be reliably wealth ranked. There were 38, 42, and 57 respondents in the high, medium and low wealth categories respectively, which broadly reflected their proportions in the wider community (based on independent consensus among key informants and data from the proportionate piling exercises discussed below).

The process of wealth ranking was initiated with a series of discussions about livestock. This often took place at the well as herds came and went, or at dusk at the village as livestock returned from grazing. I was often informed that the livestock grazing around the village belonged to *less abled* men although some of the cattle were owned by *rich men* who had left them to provide milk for their second wives and children. Using this as a starting point I would then ask the respondent to differentiate between the wealth status of the various owners of the herds we saw. It was through these initial discussions that I got a sense of how wealth was viewed by participants and how many functional categories were articulated. As mentioned above, it was surprising how few wealth categories respondents referred to when asked to differentiate a group of families on the basis of wealth. These early discussions to establish local wealth categorisation and the language around wealth did not move far past the ubiquitous descriptors which translated literally as *less*

abled families, somewhat abled and *very abled/rich.* Respondents stated that although it was possible to differentiate within the categories (based on current asset holdings), that was not necessarily a reliable guide to predict which of them would be in a better position the following year. This concept was stated frequently and seemed to be the root of the absence of a more differentiated local wealth categorisation.

Another technique employed to initiate discussion on differentiated wealth among members of the community was the use of 'proportionate piling'. Stones were used to represent either families or livestock, and small groups or individual respondents were asked to allocate stones to different groups (e.g. livestock in cattle camps versus livestock around the village) in a ratio that reflected the actual amount of livestock in both areas as closely as possible. The number of stones used to begin the exercise varied depending on the availability of small stones, but was generally not less than fifty (children were very enthusiastic collectors). Generally the line of questioning followed the majority of the stones because it is much easier for respondents to accurately allocate stones when there are a reasonable number in the starting group (such that allocation can be done visually rather than numerically). Proportionate piling exercises concerning the proportion of cattle camp herds owned by *less abled, somewhat abled* and *rich* families for example, were used as a form of cross-checking the information aggregated from individual interviews (see table 3.5 below). The wealth ranking exercises involved key informants ranking each family that had been interviewed according to the three wealth categories that had emerged from the explorative discussions and piling exercises.

The data presented in table 3.5 is disaggregated for wealth category and describes respondent polygamy (122 respondents), average age (89 respondents), number of offspring (129 respondents), livestock holdings (TLUs[34]), and herd size accuracy and

[34] The tropical livestock unit (TLU) (Jahnke, 1982) figures used throughout this thesis do not include suckling animals, this is due to the relatively poor survival rates in the first year of life. One TLU is regarded as equivalent to 1 camel, 1.43 cattle, and 10 sheep or goats.

refusal rate (119 respondents). The responses for each category of data represent responses from different subsets of respondents within the overall dataset. The reason for the different sample sizes in each of the analyses concerns the nature of the enquiry. For example, respondent age could not be established with any certainty for a significant number of respondents (38 percent), for this reason the sample size for respondent age is reduced. Similarly, data pertaining to children and education was difficult to establish in the absence of the respondents wife (this was often a good opportunity to arrange a later visit at the homestead).

Despite respondents' occasional refusal to quantify their livestock holdings, and the frequently misleading responses (see table 3.5), in the vast majority of cases the information was well-known to the 'research team', and could be independently established (this was also well-known to respondents). The reluctance to quantify livestock holdings was based on Orma cultural traditions whereby revealing herd size could confer bad luck (this was confirmed by several respondents). However, in many instances, interviews took place within sight of the respondent's herd (while they were being watered at the well, for example). When the discrepancy between reported livestock holdings and actual holdings was pointed out, it was considered a great source of amusement and it was often suggested that I count the livestock for myself. Livestock holdings were under-reported by respondents when accurate figures were not provided (see table 3.5). This presented an ethical dilemma despite respondent anonymity. Collecting information that respondents had made clear they did not want to share was potentially problematic, although it was judged that in most cases, the refusal reflected cultural traditions rather than any fiercely held notions of privacy. Therefore, reported livestock holdings were always verified, and corrected where necessary.

Table 3.5 Characterising Respondent Wealth Categories

Wealth Rank	Respondent Polygamy (%)	No. of Offspring	Age (Head of Family)	Total TLUs	Correct Herd Size (%)	Refusal Rate (%)
High	78	13.6	55	46.2*	40	13
Medium	39	8.9	57	10.2	64	3
Low	37	9.8	54	4.0	92	0

* An 'outlier' was removed from the sample[35]

It is clear from the characterisation of wealth categories in table 3.5 that several patterns can be observed in the data. High wealth respondents were most polygamous and consequently had more children than medium and low wealth families. The livestock wealth distribution reveals that low and medium wealth categories are more properly understood as very low and low wealth categories respectively. Respondents with more assets were more cautious in revealing the extent of their assets which is reflected by their higher refusal rate and reluctance to provide accurate herd size responses. In keeping with similar studies on other pastoralist communities in Kenya (Taches & Sjaastad, 2010) the proportion of families in the high wealth category was low (28 percent).

3.10 Data Quality Issues

3.10.1 Asking Questions & Misunderstandings

Towards the end of the fieldwork I had begun to appreciate the problems in my initial approach to exploring Orma livelihoods. These problems, more often than not, concerned my 'way of asking' (Csordas *et al.* 2010) or an incorrect assumption inherent in my question. Charles Briggs (1986) argues that interviews are a multifaceted speech event, encapsulating the native theories of communication of researchers, rather than those of respondents. The selective

[35] The outlying family owned 600 TLUs which compared with 170 TLUs for the second most wealthy family. The average livestock holdings for high wealth families including the outlier is 62.1 TLUs. The figure included in table 3.5 (46.2 TLUs) is felt to be more representative of the livestock assets of high wealth families overall.

mediation of language, particularly through an interpreter, leaves considerable space for skewing of data according the researcher's own 'rhetorical modes' (Coe, 2001 p.394). The less 'directed' nature of semi-structured interviews may diminish this bias by creating space for negotiated 'rhetorical modes'. Indeed, Coe (2001) advocates listening to and imitating local meta-communicative strategies, and highlights the role of meta-theories of knowledge, 'which form the basis for respondents' interpretation of what our research means and what we are seeking' (Coe, 2001 p.395). On the basis of the interviews carried out as part of this study, I argue that both the researcher's and the respondent's mode of communication and knowledge are dominant at different stages of the process. Sometimes a question may be correctly understood by a respondent, but in their answer they incorrectly assume knowledge on the part of the researcher which is required to render their answer intelligible.

One such misunderstanding in the initial interviews concerned requests made of respondents for average values (for example, average number of household migrations in the short rains). Based on recent criticisms of equilibrium models in financial economics, Krätli & Schareika (2010) question the utility of average values when dealing with conditions of unpredictable variability. When the most likely breakdown of an average is 'asymmetric' (as in the case of systems characterised by non-uniform rainfall distribution), average values cease to be meaningful simplifications and can become highly misleading. Indeed, when pastoralists are successful producers (in arid and semi-arid areas), they do so by exploiting asymmetric distribution, not stability and uniformity. This is also the case for variables correlated with environmental variability such as household mobility and cultivation. When the true answer to the question 'what is the average number of times a respondent moves their household in the short rains?' is, 'for three years we didn't move and the following year we moved seven times' the average value is problematic. For this reason, questions requiring the respondent to calculate an average were typically met with quiet rumination

followed by a comment that it was “hard to say” or that it “depends on the rains”. After an initial period of adjustment and learning I could interpret these answers as being a very honest response to an almost meaningless question and developed different ‘ways of asking’ (Csordas *et al.* 2010).

Another source of error in interviews is related to what Coe (2001 p.395) described as, ‘respondents’ interpretation of what our research means and what we are seeking’. Often respondents would discount certain types of information because they believed it to be of no interest to me. One example of this was when I enquired about the motivations for household migration. When asked ‘what are the reasons for moving your household?’ respondents typically mentioned, rainfall, education, and insecurity. In certain cases I strategically employed ‘leading questions’ in order to gain greater insight into household mobility. I became aware that *haborgesa* (Acacia seedpods) were highly prized feed for smallstock and that households often migrated towards sections of the Galole River with particularly dense Acacia forests during certain seasons to take advantage of this temporary resource. When a respondent had exhausted their reasons for moving their household, I would ask if they were sure there are no other reasons to move. Usually, they would say they were sure, I would then ask about *haborgesa,* and they would normally be somewhat amused that I knew about, and was interested in *haborgesa.* I would then ask ‘and what other reasons for moving?’ The respondent would then genuinely rack their brain for every conceivable motivation for household mobility, often revealing some interesting information. I believe this technique, while being slightly deceptive on my part, not only elicited better information on household mobility but showed the respondent that nothing was too small or insignificant to be of interest to me, which may have positively influenced some of their answers to my other questions.

3.10.2 Language & Translation

As discussed above, the issue of language and the need for translation complicated the process of sharing information. 'Real-time' (sentence by sentence) translation in the field was the preferred approach, but when this would interfere with the flow of a discussion or the continuity of developing ideas, translation was done at longer intervals. Both interpreters and KPR officers were paid a wage based on a daily rate suggested by my first interpreter. My relationship with my first interpreter went beyond a professional relationship as he was one of the few people with whom I could speak fluently and (as noted above) his own family were my 'host family'. Our friendship conferred both positive and negative impacts on the fieldwork. We were able to achieve a good level of shared understanding concerning the methodological approach of the study, which was also the case with my second interpreter. I changed both interpreter and KPR officer when I moved from Tiltila to Waldena because of the necessity for the research 'team' to be intimately familiar with the community and geography of the study area. The second interpreter came highly recommended by the first and also became a friend. The negative aspects of my close personal relationships with my colleagues involved sustaining their motivation in difficult working conditions. Despite some inevitable friction and disagreements, I regard myself as astonishingly lucky to have encountered such diligent and enthusiastic individuals who were willing to leave their families for such extended periods.

3.10.3 Reliability & Validity

Generally there are two different strategies to conceptualising and measuring validity in a given context. The first is to apply and modify traditional criteria (Kirk & Miller, 1986), although this strategy has been skeptically regarded by Luders & Reichertz (1986 as cited by Heffernan, 2003 p.8), who doubt that 'it is possible to apply the elaborate criteria of 'hard' social research to qualitative research because the 'concepts of reality' of both differ too much'. The second strategy is based on the idea of 'subject-appropriateness'. As well as research methods being appropriate to the subject under study, criteria and examinations

used for their evaluation must also be appropriate to those research methods (Flick, 1992). This point resonates with the study in question due to the many contextual limitations which rendered certain methodological standards difficult to achieve (such as random sampling). However, in the context of a lone researcher with very limited resources working with a partially nomadic and scattered population, the choice of both methods and sampling technique were judged to be the most appropriate available. Every effort was made to verify and cross-check data, often using different methods (semi-structured interviews, group discussions, and key informant interviews). Despite the recognition of the weaknesses of the methods employed in terms of validity and reliability, it should be acknowledged that the methods used (and the overall approach), served to generate rapport with the community, which would have been difficult to establish using a more structured approach to interactions with respondents. Allowing respondents to direct discussions rather than rigidly sticking to an externally conceived agenda meant that, through word of mouth, the 'interview encounter' was conceived by the community as a conversational event, which could be enjoyable rather than a drain on their time. A more survey based approach would have generated more statistically significant data although it is argued here that the interpretation of the data would have been, conversely, less valid and reliable, due to a lack of contextual insight with which to situate the data appropriately.

3.10.4 Seasonality

Appreciation of the importance of seasonality to pastoralists is important to the methodological approach of the study. Huge numbers of rural people throughout the world suffer acute seasonal hardship made worse by variations in seasonal patterns. Therefore 'seasonal variability' as opposed to seasonality *per se* is the key factor in causing extreme seasonal hardship (Chambers *et al.* 1981). However, as Chambers *et al.* (1981) points out, the degree of hardship undergone is not simply a matter of the severity and unpredictability of seasonal variability. It also depends on the level of technology and system of socio-economic organisation with which given climatic conditions are confronted. For the individual or family

it also depends on the position held within the society and its class structure. This resonates with Sen's (1981) concept of entitlements, which mediate the effects of poverty and famine. It is necessary to look at a family's 'social capital' (discussed above) as well as their physical asset holdings (and other forms of capital), to understand their vulnerability to unpredictable events such as 'seasonal variability'. While the current study did not comprise fieldwork across an annual cycle (this would have been preferable if time and money had allowed), an awareness of the importance of seasonality and seasonal variability in the livelihoods of research participations directed the methodological approach, whereby observations and participant responses, based on current behaviour or conditions, were not extracted and divorced from their temporal component.

3.10.5 Participant Observation, Establishing Rapport and Building Trust

Several factors endeared me to the Orma from the outset, the first of which was that I was British, the second was that I was alone. My solitude was unusual in an area where *dungas* (white people) were rarely seen, particularly on their own, travelling on foot. The fact that under colonial rule the Orma were one of the groups to substantially benefit[36], meant that for the majority of older Orma, I was the first British person they has seen since colonial times, and I was welcomed very warmly. Despite my claims to be conducting PhD research, a good number of older Orma brushed aside my 'cover story' and told me that they knew I had been sent by the *mangudo* of *ingeresa* (British elders) who were possibly deciding whether or not to return to Kenya based on my report.

> *"Tell the mangudo of Ingeresa to come back- we are needing help"*
>
> Respondent 47

[36] Prior to colonial rule the Orma had suffered huge human and livestock losses to a series of epidemics, this meant that they would have inevitably lost large swathes of territory to rival ethnic groups were it not for the imposition of various ethnic boundary controls by the colonial administration.

I was instructed to pass this note to my elders:

> *"You have forgotten about us- leaving us to the death of god- there is another death that is coming at high speed- come here and make a party- the Ormas will vote for you"*
>
> Respondent 139

Despite the palpable rapport that my nationality generated, the phenomenon presented a veritable minefield in terms of 'raising expectations' (Edwards, 1995 p.2) from the research. I strenuously tried to disuade those who interpreted my presence as a harbinger of recolonisation, or a British bid for democratic control of Kenya. In spite of my best efforts, there remained a lingering belief among some, that my arrival was not entirely disconnected from the previous British presence in the district. It transpired that there was actually a well-known Orma prophecy that the *Ingeresas* would return to Ormaland to rule the Orma a second time, which went some way to explaining the persistence of their suspicions.

There were several disadvantages associated with being a lone researcher. I reflected early on in my research, that in the absence of colleagues with which to reflect on the themes and data emerging from the interviews, it was a struggle to maintain objectivity (or more accurately my detached subjectivity). I began to accept certain practises uncritically as I became accustomed to them (Bechhofer & Paterson, 2000). However, there would also have been disadvantages associated with being part of a team, particularly one containing older and more senior members. This would raise expectations (in terms of anticipating subsequent development projects) which could result in more strategic offering of information. This would be harder to 'break through' in the presence of more senior colleagues with perceived power. I think the fact that I was clearly throwing myself in at the deep end, endeared me to the Orma after the initial few months of suspicion. When I arrived at a remote cattle camp after a five hour walk, it is reasonable to assume that I was treated differently than if I had arrived in Tiltila in a land cruiser.

My decision to participate in the chewing of *miraa*[37] seemed to engender a perceptible increase in trust and camaraderie even with people beyond whom I had directly participated with. News of both late night *miraa* chewing sessions with well regarded elders, and trips to remote cattle camps spread quickly and I found research participants whom I had never met commenting on this with apparent delight. People were genuinely shocked that I would walk so far carrying my own equipment. Another practise which may have endeared me to the Orma (and also helped me gain some insight into their lives) was my adoption of Orma eating habits. I ate whatever my hosts ate, whether that be milk, food aid, or nothing at all (I offered some tea leaves, sugar, and tobacco in return). Lastly, I think my patience and willingness not to impose my research agenda was appreciated by several Orma elders who I realise in retrospect, were actively testing my ability to be patient and respectful. I would not force the conversation to issues of relevance to my research if it disrupted an existing discussion or cut-off their own curiosity at my presence. I was happy to sit and discuss our cultures, offer some humour, or listen to peoples' stories. The importance of this was confirmed to me following one particular exchange. The 'research team' spent almost a whole day inside our hosts house (Omar- one of the most well respected elders in the area) during one of the only periods of rain throughout the fieldwork. Omar, sensed my frustration. I wanted to interview some of his neighbours in his hut but they had their own issues to discuss and my interpreter wanted to rest. After a frustrating day understanding little of the men's discussion, we each drank almost two litres of camels milk (our only food of the day) before discussing some strange lights in the sky, and then retiring for the night. The following morning Omar came to me, "You have been patient yesterday- today you will do many interviews". He then proceeded to use his influence to induce almost all the family heads of his small mobile village to offer themselves for interview over the course of the day. He kept producing people until both myself and my interpreter were

[37] Miraa is chewed recreationally by the Orma. It contains an alkaloid called cathinone, an amphetamine-like stimulant, which causes loss of appetite, and euphoria.

too exhausted to continue. At this point he laughed and gave a knowing smile, indicating that he had more than delivered on his promise. I felt myself being tested on many occasions to see what kind of person I really was. I found this totally appropriate. Considering I had arrived demanding of them their time and asking personal questions, it seemed completely fair that they should test, interrogate and even provoke me, to get some insight into what kind of person I really was, before they trusted me. Due to the language gap, their methods of testing me were probably the most effective strategy available to them to get a real insight into who I was, and after being initially frustrated and defensive at times, I started to appreciate their intelligence in dealing with me.

3.11 Conclusion

This chapter has sought to ground the study in a detailed description of the history and people of Tana River District. The relevance of history is evidenced by the long shadow cast by old conflicts on popular perceptions of the district's inhabitants to this day. Such perceptions affect resource allocation and investment and must be considered an important component of the research context. Secondary data on official measures of poverty and the poor state of services and infrastructure in the district, serve to contextualise some of the empirical contributions of later chapters. Orma history, culture and tradition are described with reference to their changing role in shaping Orma livelihoods.

The chapter has presents an outline of Orma livelihoods including a description of the key features of the production system. This will be supplemented with more detailed empirical data throughout the subsequent chapters. In describing the methodological approach, some of the key challenges to the collection of reliable and valid data have been explored. Methodological challenges associated with sampling technique and achieving representativeness under difficult working and living conditions are discussed in light of key decisions which have shaped the dataset on which this thesis is based. The following chapter develops the characterisation of

Orma livelihoods through a focus on household and herd mobility and the impact of services and infrastructure in shaping Orma livelihood strategies.

Chapter Four- Orma Mobility and Access to Services

"Moving is better because livestock is our income- we follow our livestock to get milk. We don't have money we don't have stone buildings- milk is our money"

Respondent 98 (medium wealth)

4.1 Introduction

In characterising the drylands in Chapters Two and Three, a substantial portion of the background literature necessary to understand the ecological and climatic basis of pastoral mobility has been outlined. This chapter will extend this use of the literature to underline the rationality of Orma livelihood strategies, particularly household mobility and herd maximisation, in contrast to widely held beliefs that pastoralist production is inefficient (Hesse & MacGregor, 2006). Having made a case for the efficiency of mobile production systems in the drylands, the chapter focuses on the ways in which household mobility dynamics are defined in response to a number of other key factors (wealth, access to services, social capital etc). Constraints to mobility arise when services are provided in a way which either limits a household's ability to move, or removes labour from livestock related activities. Conventional state service provision is designed to be utilised as part of a sedentary lifestyle (Scoones, 1995). This chapter will show that in combination with poorly developed infrastructures, static and inflexible service provision can undermine mobile production systems, particularly for what will be defined as 'threshold families'.

Education provision emerged from interviews as the most significant service in terms of household mobility patterns. However, the importance of education goes beyond its role in constraining household mobility. In the context of increasing drought frequency (Mortimore *et al.* 2009; ALive, 2006; Niamir-Fuller & Turner, 1999; Oxfam, 2009; Osbahr & Viner, 2006; GoK, 2002), declining per capita livestock holdings (Niamir-Fuller & Turner, 1999; Lybbert *et al.* 2004; ALive, 2006; Reid *et al.* 2007), declining production per livestock unit (Ehui *et al.* 2002), and privatisation of rangelands (e.g. Mkutu 2004, Cullis & Watson 2004; Tadesse & Peden 2005; Mwangi 2006; Barrow & Mogaka, 2007), education has come to represent the future for many pastoralist children. Due to the increasing importance of education in pastoral livelihoods and its role in defining livelihood strategies among respondents, it is covered in greater depth than other forms of service provision affecting Orma livelihoods. Consequently, Chapters Five and Six examine education separately from other services. The bias towards education in the fieldwork interviews reflects the study aim 'to embrace a holistic approach and be guided by the issues and constraints of most relevance to local people'. As a result of this approach and the limits of time and resources, certain research themes received more attention at the expense of others. Issues such as the provision of informal financial services and veterinary services were discussed with respondents and key informants but insufficient data was collected to produce reliable quantitative data on the accessibility and quality of these services. This chapter therefore, presents data on Orma household and herd mobility which, in concert with Chapters Five and Six, highlight the intimate link between Orma livelihood strategies and access to services.

4.2 The Ecological Basis For Pastoral Mobility Revisited

It is worth briefly reiterating and then developing those aspects of dryland ecology covered in Chapters Two and Three which are of most relevance to pastoral mobility. The chapter then goes on to look in more detail at those aspects of ecosystem dynamics which form the basis for the inherent productive and environmental advantages of mobile pastoralism.

A radical re-thinking of range ecology in the 1980s argued that the classical ecological paradigm, based on Clementian models of plant succession, could not be applied to most dryland ecosystems. Conrad (1941) observed that in dry regions, rainfall variability increases as total rainfall decreases. The drylands are thus characterised by very high levels of rainfall variability, such that measures of inter-annual rainfall variability can be a more accurate indicator of ecosystem rainfall patterns than annual rainfall mean (which is the typical measure by which ecosystems are categorised). Drylands grass production can range from zero to several tonnes per hectare (Scoones, 1995) depending on seasonal rainfall, which is received in a bi-modal distribution in many parts of Africa and South America (Reid *et al.* 2007). Variation is further elevated in East Africa's drylands due to the influence of sea surface temperature anomalies associated with El Niño-Southern Oscillation (ENSO) patterns (Williams and Funk, 2011). Kenya's dryland ecosystems, therefore, experience highly variable rainfall and so-called 'non-equilibrium' dynamics predominate. Ecological systems displaying non-equilibrium dynamics do not exhibit the closely coupled plant-herbivore interactions typical of 'stable equilibrium' systems. As such, grazing intensity, central to Herskovits (1926) and Hardin's (1968) influential theories, becomes less relevant to the definition of ecosystem dynamics. Under this new paradigm, available soil moisture supplants grazing intensity as the most important determinant of species composition and biomass production (Sanford, 1982; Ellis & Swift, 1988; Westoby *et al.* 1989; Behnke & Scoones, 1993; Ellis, 1994; Scoones, 1995; UNDP, 2003). In practise the distinction between systems exhibiting equilibrium, non-equilibrium and multi-equilibrium dynamics is blurry and coefficients of inter-annual rainfall can be a misleading basis for categorisation (*cf.* Ellis, 1994). There is, however, broad consensus that in the drylands, grazing intensity, topography, fire management and soil fertility are secondary determinants of pasture quality and quantity (Hesse & MacGregor, 2006).

As a consequence of this shift in ecological paradigm and the diminished relevance of plant-herbivore interactions, the extent to which pastoralism causes permanent environmental degradation in the drylands has been radically reassessed (Niamir-Fuller & Turner, 1999). Under equilibrium-based theories of ecosystem dynamics, the concept of 'carrying capacity' was a central pillar of resource management strategies which sought to combat the process of 'desertification' (Warren & Agnew, 1988). Government policy across East Africa encouraged pastoralists to settle and limit stocking rates to the level or 'carrying-capacity' over which the ecosystem was believed to become degraded in the driest years (Mortimore *et al.* 2009). Such conservative stocking rates, based on the western model[38], have come to be regarded as extremely inefficient in highly variable environments such as Africa's drylands (Abel & Blaikie, 1990). As described in section 2.4.2, 'carrying-capacity' based stocking controls were designed to restrict anthropogenic desertification, which became an established phenomenon on the basis of a small number of highly influential studies in the 1970s (Lamprey, 1975; Eckholm & Brown, 1977) which were subsequently found to be unreliable (Mortimore *et al.* 2009).

It has been well established that in highly variable environments, variation of primary production decreases substantially as the geographical scale of utilisation increases (Scoones, 1995; Behnke, 2007). The importance of mobility in exploiting this principle to maximise livestock feed quality is increasingly understood by a wider audience. The scientific basis for the productive advantages of mobile pastoralism as compared with ranching have been reinforced by an increasing number of studies on dryland plant phenology, which emphasise the transient nature of pasture quality (Kim, 1995; Mayland, 2000; Alimaev, 2003; Alimaev & Behnke 2007; Kerven *et al.* 2006). Consequently, a major component of successful herding is movement towards pasture of high quality rather than away from low quantity (IIED & SOS Sahel, 2010). Ruminants cannot compensate for poor quality pasture by increasing quantity because a low quality diet results in a drop in intake capacity

[38] Designed in temperate ecosystems exhibiting classical stable equilibrium dynamics.

(Krätli, 2008). The knowledge and ability of the herder to guide livestock to areas with high quality grazing, combined with the genetic and behavioural adaptations of the livestock, facilitate the extraction of a diet with substantially higher nutritional content and digestibility than the average nutritional value of the pasture they are grazed on (Diallo, 1978; Traoré, 1978 cited in Breman & de Wit, 1983; Ayantunde *et al*. 1999; Krätli & Schareika, 2010). Governments have been slow to appreciate the productive advantages of pastoral mobility. This has resulted in a continuation of policies which compromise pastoralist production and exacerbate over-grazing around settlements by obstructing movement of pastoralists and their herds with barriers, boundaries, regulation and inflexible service provision (Mortimore *et al.* 2009).

4.3 Management Strategies and Adaptations that Enhance the Productive Advantages of Mobile Pastoralism

As has been touched on above, pastoral mobility has largely been regarded as 'reactive' or 'passive', a coping strategy (minimising damage) rather than a production strategy (enhancing performance) (Krätli, 2008). Increasingly however, mobility is understood in terms of pastoralists' proactive and skilful targeting of transient nutrient concentrations to enhance productivity[39], rather than a reaction to a deficit of pasture in their current location. Similarly, the pastoralist strategy of herd maximisation, once dismissed as the 'cattle complex' (a practise bound up with pastoralists' sense of pride and social-standing), is now being reappraised such that a more holistic understanding of the true basis of pastoralism is emerging. In this section, management strategies and livestock adaptations that enhance the productive advantages of mobile pastoralism will be summarised.

[39] Roe *et al.* (1998) characterised pastoralism as 'high-reliability system' which operates not by avoiding risk but by harnessing it as the very base of production. Krätli and Schareika (2010) highlight the incompatibility of such insights with the mainstream view that unpredictable environmental variability is an obstacle to production in the drylands.

4.3.1 Production Strategies

A number of production strategies are commonly employed by pastoralists to enhance productivity and diversify risk. Although some of these strategies have been touched upon in Chapters Two and Three, it is worth revisiting the main strategies because of their bearing on the analysis of pastoral mobility and service provision later in the chapter.

Herd Maximisation

Changes in the way pastoral herd maximisation[40] is understood are based on the reappraisal of underlying ecological concepts summarised in the previous section. A decline in the importance of 'carrying-capacity' and grazing-induced environmental degradation has important implications for theories of optimal livestock management strategies in the drylands (Orindi *et al.* 2008). Multi-year droughts are usually the cause of significant livestock mortality, whereby the length of the drought is more critical to mortality rates than the number of animals enduring the drought (Ellis & Swift, 1988). Indeed, the higher the variation in primary production, the greater the advantage of herd maximisation over 'conservatism' (basing stocking rates on the driest years) (Sandford, 1983).

A study by Lybbert *et al.* (2004) looked specifically at the relationship between herd size and livestock mortality among Borana pastoralists in southern Ethiopia. They concluded that larger *ex ante* herd size is the most effective means to ensure a viable *ex post* herd. Despite this, livestock mortality was positively correlated with herd size although the coefficients relating *ex ante* herd size to mortality implied mortality loss of less than one head for each animal added to the herd, no matter the herd size or rainfall level. A study by McPeak & Little (2005) in northern Kenya confirmed this relationship among Gabra, Il Chamus, Samburu, Ariaal, and Rendille pastoralists. It can therefore be concluded that in highly variable environments, herd maximisation

[40] Herd maximisation refers to the strategy of building up livestock numbers as much as possible in years of abundant pasture in order to maximise the number of animals surviving severe drought events.

may be costly in terms of livestock mortality in drought years but is the most effective strategy to assure the long-term viability of the production system in the absence of financial services or well-functioning livestock markets (Barrett *et al*. 1998; Fafchamps & Gavian, 1996).

Herd Splitting and Livestock Loaning

Both herd splitting and livestock loaning are strategies that incorporate the benefits of herd dispersal. Herd splitting usually involves sending some animals to a cattle camp to benefit from better grazing, while the remainder are grazed closer to the household so that the family can benefit from milk production. Livestock loaning generally occurs between members of the extended family with the dual purpose of dispersing livestock wealth and supporting impoverished family members. Through herd dispersal, both strategies reduce localised risk factors such as pasture shortage, disease, predation and conflict. Herd splitting is undoubtedly the more significant strategy due to the greater number of animals involved, although the latter has the added benefit of building social capital and strengthening networks which enhance labour sharing and security in times of stress (Barrow, 1996). While livestock loaning has been widely reported to be in decline in pastoralist communities (Huysentruyt *et al.* 2002), it still constituted an important strategy among respondents. Of the 141 Orma respondents interviewed on this issue, 30 (21.3 percent) were in possession of loaned livestock and 9 (6.4 percent) had loaned livestock to others (exclusively to extended family members). Those respondents receiving loans were predominantly in the low wealth rank (68.8 percent) while those loaning livestock were predominantly in the high wealth rank (60 percent), the remainder coming from the medium wealth rank in both cases.

Unlike livestock loaning, herd splitting was harder to quantify owing in part to the highly variable and seasonal nature of the strategy. However, of the 113 respondents who provided information on the use of cattle camps, 100 (88.5 percent) had some or all of their livestock in a cattle camp at some point in the year. The remaining 13 respondents (11.5 percent) never use cattle camps. While the use of cattle camps

does not necessarily imply herd splitting, respondents reported that it is unusual for a family to send all of their herd to the cattle camps unless they either have very few animals or rains have been missed in their home area and they are unwilling or unable to move their house. The majority of interviews were carried out with respondents over a period of 7 months; accordingly responses concerning the location of their herd at the time of the interview are potentially misleading when aggregated, due to the effects of environmental variability and seasonality. What can be surmised from the data is that the vast majority of households utilise cattle camps, which typically involves splitting their cattle herd in order to improve the condition of the camp herd while continuing to subsist from the production of the milkers grazed around the household.

Diversification of Livestock Species

Diversifying livestock holdings to include multiple species has a number of advantages which have the potential to both improve productivity and spread risk. Section 3.6.3 highlighted the advantages of keeping both grazers (cattle and sheep) and browsers (goats and camels), in terms of effectively utilising available vegetation. Since the quantity and quality of herbaceous plants is highly variable, species able to feed on leaves and fruits from trees and shrubs can therefore even out some of this variability.

> *"There are no cows at home- all herds have migrated to Shere. The person who has milk now has camels or goats."*
>
> Respondent 99 (high wealth)

> *"If you only have cows it is difficult to feed the family, cows only produce enough milk in the wet season. If wet or dry, goats produce milk. If you want to eat meat it* (keeping goats) *is the easiest way and if you need money you can sell immediately. For cows you must look for good pasture but for goats they will eat anything."*
>
> Respondent 2 (medium wealth)

Camels have a particular advantage in the utilisation of vegetation niches (du Toit 2003). Their size allows them to feed on tree canopies which are out of reach of other domesticated species (with the exception of tree climbing goats). Although currently only 24 respondents from a total of 144 (16.7 percent) keep camels, their use is growing as more Orma become familiar with camel husbandry. As described in section 3.6.3, consorting with Somalis (rival users of water and grazing resources) in order to learn about camel husbandry is frowned upon by the Orma *mangudo* (elders). Despite this, 41 percent (16/39) of high wealth, 16.3 percent (7/43) of medium wealth and 1.7 percent (1/58) of low wealth households now keep camels (the majority purchasing camels and learning husbandry from Somalis). In addition to broadening vegetation utilisation, keeping multiple species generates a wider range of livestock products which may be in abundance at different times of the year. Introduction of smaller species increases asset liquidity and the availability of meat, hides and oil. Different species are also susceptible to different diseases which serves to spread the risk of herd loss resulting from disease epidemics.

Bifurcated Cattle Selection

Respondents frequently referred to two different types of bull which were actively maintained within herds and valued for different reasons. The larger bull which has an insatiable appetite and puts on weight quickly in the wet season fetches a better price at market, while the smaller bull produces good milk and can survive the drought. The bifurcation of selection strategies appears to be a direct response to the growing need to engage with the market to supplement the subsistence diet with purchased grain. For more wealthy households the growth in investment and expenditure opportunities motivates increased livestock sales and a shift to more market-oriented traits. Section 3.6.1 outlined these changes in greater detail. Large livestock, bred to put on weight quickly to achieve a good price at market, are typically less able to survive without water and endure long migrations to maximise feed intake. Therefore, market orientated production strategies can affect herd mobility and the resilience of the production system.

Marriage and Livestock Production

Reciprocal arrangements for accessing valuable natural resources can be forged through marriage. Respondents highlighted the strategic nature of marriage in facilitating access to wells, and by extension, the surrounding grazing land. However, respondents also suggested that 'marrying for love' was becoming more common, and that the authority of the *mangudo* ('elders') in general was believed to be in decline. Polygamy can also enhance production by increasing the supply of labour. The practise of polygamy is constrained by the cost of multiple dowries (the cost of a dowry is generally higher for a man taking a second wife) and the added expenses involved in running multiple households. Polygamy was therefore found to be related to family wealth status, with 77.8 percent (21/27) of high wealth, 39 percent (16/41) of medium wealth, and 37 percent (20/54) of low wealth respondents having more than one wife. Additional benefits of polygamy concern the ability to employ household splitting strategies. This will be discussed later in the chapter in relation to wealth differentiated livelihood strategies.

4.3.2 Livestock Adaptations

As discussed above, pastoralist livestock are able to extract a diet of considerably higher nutritional value than the average value of forage on the range. This hinges on both the skill of the herder in directing livestock to the best pasture, and the ability of the livestock to feed selectively on the most nutritious forage (Krätli, 2008). The herder utilises the macro-level heterogeneity of the environment to enhance production while livestock utilise micro-level heterogeneity to enhance their diet. The differential distribution of nutrients at the micro-level applies to swards, plant species, plants of the same species and even parts of the same plant (Krätli & Schareika, 2010). Section 3.6 outlined ways in which individual animals can further enhance their productivity and survival through their use of shade, the timings of feeding and resting, and their ability to negotiate difficult terrain and undertake arduous daily journeys (Brewer, 2005; Mortimore *et al.* 2009). The morphological and physiological adaptations of pastoralist livestock, which enhance heat dissipation and facilitate regulation of metabolic rate and water-loss have been covered in

section 3.6 and will not be reiterated here. Extra-genetic inheritance plays an important role in transmitting selective feeding behaviour between members of the same herd, although this is intimately intertwined with instinctual behaviour, and learned behaviour from negative ingestive experiences. Livestock feeding is also negatively influenced by high environmental temperature (Kadzere *et al*. 2002), and factors which stress the livestock (Waiblinger *et al.* 2006). Management of livestock stressors relies on skillful herding (Krätli, 2008). Research has shown (Banner, 2008 cited by Krätli & Schareika, 2010) that ruminants can be trained by handlers to feed selectively on specific plants while avoiding others.

4.4 Other Motivations for Mobility

4.4.1 Seasonal Grazing and Key Resource Areas

While rainfall is highly variable in the drylands there are often permanent key resource areas that can be utilised during the dry seasons (Scoones, 1995; Illius & O'Connor, 1999, 2000). The movement of households or herds towards these areas can be distinguished from movement targeting transient nutrient concentrations on the basis of predictability. Both seasonal movements to dry season grazing areas (associated with transhumance), and movements to key resource areas, follow a routine pattern. Use of dry season grazing areas is often restricted when pasture and ephemeral standing water are in abundance in wet season grazing areas. The difference between seasonal dry season grazing areas and 'key resource areas' is that the latter are generally the wettest and most productive component of a heterogenous landscape (or an area with a key seasonal resource), while the former are restricted grazing areas close to permanent water sources. Use of these resources is often limited by factors which discourage continual use. The seasonal presence of parasitic insects, high temperatures (at lower elevations), or poor security can all restrict the use of key resource areas (Scoones, 1995; Coughenour, 1992) at certain times of the year.

Migration may also take place in response to seasonally available feed resources such as seed pods. Seed pods can be an important protein supplement that increases appetite and provides nutrition and are not subject to the same variation as grasses (Coppock & Reed, 1992; Oba, 1993). Respondents reported that *haborgesa* (Acacia seedpods) were a highly prized feed for smallstock and the timing of their availability influenced household and herd mobility patterns:

> *"I have one house. Every dry season of the last five years I am in Ongola because there is so many haborgesa* [Acacia seedpods] *and the soil is cool."*
> Respondent 104

Areas known by pastoralists to be rich in seed pods at certain times of the year can also be regarded as a type of 'key resource area'. Household migration may also be undertaken in order to opportunistically cultivate crops. This aspect of mobility will be returned to later in the chapter with reference to the empirical data on respondent cultivation practises.

In Ormaland there are a number of dry season grazing areas which are restricted by local custom in the wet season. As mentioned in Chapter Three, there are also several controlled grazing areas surrounding primary schools known as *laf sera* or literally 'controlled land'. The main 'key resource area' still available for use by the Galole Orma is known as *chaffa* and forms part of the fertile Tana Delta. During the 1984/85 drought, 56.3 percent of respondents reported taking their herds to *chaffa*, 21.9 percent to *kungu* (Tsavo-East National Park), and the remainder scattered across Ormaland. A large part of chaffa (40,000 hectares) has been appropriated by the Government and leased for irrigated agriculture and biofuel production. In addition, Tsavo-East, Galana Ranch, Tana River Primate Reserve, Kora National Reserve and Arawal Nature Reserve are all now restricted areas where grazing livestock is prohibited by law. Gaining access to key resource areas is therefore becoming increasingly difficult for Orma pastoralists, and in drought years access 'often determines whether or not herders survive without massive livestock losses' (Little,

2003). The existence of key resource areas allows grazing landscapes to support more wildlife and livestock (Reid *et al.* 2007) although due to the sporadic use of these resources, expropriation and exclusion is not perceived to impact significantly on pastoral livelihoods. The importance of this issue and the role of policy in facilitating shared usage rights is discussed further in Chapter Seven.

4.4.2 Localised Security and Predation Threats

Maximising livestock production is one type of motivation for household and herd mobility. Security concerns can also lead to migration away from areas prone to banditry, or raiding (national borders and remote areas). Pike (2004) describes the ways in which Turkana pastoralists in northern Kenya significantly increase their mobility in response to the threat of raids by the Karimojong. Mobility may also decrease in response to security threats, whereby people stay close to settlements in order to benefit from protection by Government security forces (Fratkin & Roth, 2005). Pastoralists will also migrate away from persistent predators. When a predator is able to kill livestock it will usually return for more. While herders are often able to fight off attacking predators, due to the low density of large predators such as lions, leopards etc, it is often easier to migrate away if the attacks become persistent:

> *"My heads are in Kanchara Dida (5hrs), the shoats are all here. Wild animals killed seven of my heads. There is lion and hyena around the urane (cattle camp) at Kanchara Dida. KWS* (Kenya Wildlife Service) *can sometimes refund heads as we are prohibited from killing"*
>
> Respondent 120 (medium wealth)

> *"I have 20 heads and 70 sheep and goats. They are 30km away at Hakoka beyond Komoli. I used to have shoats here for milking but because of hyena I've moved them with the heads. I don't have dogs as they moved with another herd. Without my 'watchmen' they had to move!"*
>
> Respondent 50 (medium wealth)

On several occasions during my time sleeping in the livestock *bomas* the herd came under attack during the night (by hyenas and once a leopard attacking goats). The

makalas were able to fight them off with long spears and fire although goats and sheep were often killed or injured. Livestock can also come under attack while grazing. Vegetation cover and fine-scale physical features can influence predator effectiveness (Hopcraft *et al.* 2005) such that herders may move the herd to more open ground if there is a confirmed predator threat in a specific area.

4.4.3 Security, Disease and Social Factors

In the same way that the presence of biting insects can render key resource areas unusable for part of the year, their seasonal presence across the grazing landscape can motivate migration. Ticks are a particular threat to livestock health and pastoralists may avoid areas with longer grass during the growing season, to avoid ticks and the diseases they carry (McCabe, 1995; Boone *et al.* 2002). Disease prevalent areas such as those inhabited by calving wildebeest may also be avoided due to the potential for transmission of Malignant Catarrhal Fever to pastoralist cattle (Coughenour, 2007). Despite the genetic tolerance for trypanosomiasis of Orma cattle (see section 3.6) the presence of tsetse flies may motivate migration if there are alternative feed resources available. Tsetse infested areas are a significant factor limiting livestock distribution throughout Africa (Reid *et al.* 1997) although drug therapy and tsetse control techniques and the improvement of roads and communications systems is enabling a permanent migration into tsetse-affected areas of Tanzania (Galaty, 1986) and Nigeria (Jabbar *et al.* 1990).

Movements of pastoralists and their herds are the outcomes of social, economic and political motivations, as well as biophysical factors (Gulliver 1975; McCabe 2004, Copolillo, 2000, Boone *et al.* 2002, Thornton *et al.* 2006, Baker & Hoffman 2006, Galvin *et al.* 2006). In the same way that migration can be caused by insecurity and conflict, social occasions like weddings and labour sharing (e.g. well-digging) are also common motivations for household movement. Likewise, migrations in order to access markets, utilise services, and trade livestock products with neighbouring groups are also commonplace. In particular, the role of public services in motivating or constraining household mobility will be looked at in detail later in the chapter.

4.5 Characterising Orma Mobility

The basic patterns of Orma household and herd mobility were described in section 3.5. In this section certain aspects of mobility are characterised through use of fieldwork data in order to gain insight into broader livelihood strategies which are subsequently linked with the role of service provision in Tana River District.

Photograph 4.1 A family migrating at the start of the long dry season. Houses are packed on donkeys, the girl leading them is carrying a *kurro* full of milk.

Photograph 4.2- Packing a house on a donkey before migration.

The settlement of formally nomadic pastoralists is steadily increasing in East Africa (Mortimore *et al.* 2009; Fratkin & Roth, 2005). The processes and forms of settlement depend on the context of each pastoralist group and household, although broad trends are evident. It is important to distinguish different forms of settlement as they can have dramatically different impacts on well-being. Baxter (1975) highlighted that settlement can represent opposite ends of the well-being spectrum. Families may settle based on stock wealth in order to make themselves a comfortable life, while taking advantage of the benefits associated with settlement. Low wealth families often settle due to herd loss resulting from drought or conflict which frequently results in extreme poverty as there are few non-pastoral opportunities available to stockless pastoralists, the vast majority of whom are illiterate (Desta, 1999; McPeak & Little, 2004).

The existence of multiple forms of settlement is reflected by the multiple forms and degrees of mobility in pastoralist communities. Using categories to define dynamic continuous variables such as mobility, is therefore an imperfect tool with which to analyse livelihood strategies. Specialists advocate for caution in planning development interventions based on mobility categories due to their fluidity (Toulmin, 1983; de Bruijn & van Dijk, 1995; Krätli, 2000, Fratkin & Roth, 2007). Analysing family mobility as a continuous variable, based on the number of water points used or distance travelled during the course of a year (*cf.* McPeak & Little, 2005), is an approach that requires significant time and resources, although the data is consequently richer than that produced by this study. Due to the limits of time and resources, household mobility was not quantified in terms of number of water points used or distance travelled for any given year. Instead, a typology of household mobility was used based on respondent testimony concerning longer-term mobility patterns.

Categorising families based on their current mobility can be misleading due to its fluid nature throughout the year and between years (McCabe, 1987; Krätli & Dyer, 2009), so categorisation based on longer term mobility can reduce the likelihood of misleading 'snap-shot' categorisations. In the current study, families were categorised into settled, split, and mobile families. If a respondent reported typically moving all their households to better pasture at some point in the year then this constituted a 'mobile' family. 'Split' families were multi-household families (multiple wives) whereby at least one house was settled while the others remained mobile. When all a respondent's households were 'permanently' settled (only being moved in extreme drought years) then the family was regarded as 'settled'. Families were also categorised based on wealth, using a community-based wealth ranking exercise (based principally on livestock wealth) as described in section 3.9.2. The categorisation of respondent families using two related variables (mobility and wealth) together with qualitative data (concerning social capital and alternative income sources etc.) gave a reliable indication of a family's livelihood options. The

existence of asset thresholds served to reduce the fluidity of mobility status, particularly for low wealth families.

4.5.1 Household Wealth and Mobility

The practise of polygamy allows high and medium wealth families to adopt a household splitting strategy to take advantage of the benefits of settlement (access to services and markets, more comfort and opportunities for socialising), while keeping one household moving with the herds and benefiting from subsistence production.

> *"I took a second wife to help make life easier- if children are in school I have another house to move with my animals"*
>
> Respondent 68 (medium wealth)

As table 4.1 shows, the ability to take a second wife is correlated with wealth[41]. The quotes below illustrate that this is often due to the amount of livestock required for a second dowry and the added expenses associated with maintaining a second household.

> *"If I had more heads I could marry another lady and have one house for school and one for the heads."*
>
> Respondent 64 (low wealth)

> *"I can't have all my family settled because it's too expensive, some must feed from herds."*
>
> Respondent 84 (high wealth)

Table 4.2 illustrates the relationship between household wealth and mobility. Differences in mobility between wealthy and poor pastoralists have been widely reported, for example in Niger (McCarthy & Vanderlinden, 2004), Ethiopia (Little *et*

[41] Because the number of wives has a strong positive correlation with respondent age, the polygamy level for medium wealth respondents must be regarded as an under-estimate for comparative purposes, due to the higher average ages of respondents from low and high wealth categories. For a true comparison, respondents in all wealth categories should have the same average age.

Table 4.1 Respondent Polygamy by Wealth Category and Age

Wealth	n	Average Age	Average No. Wives	Percent Polygamous
High	35	50.5	1.83	68.6
Medium	40	45.9	1.53	37.5
Low	58	49	1.36	34.5
Overall	133	48.5	1.53	44.4

al. 2006), South Africa (Baker & Hoffman, 2006) and Mongolia (Muller & Bold, 1996). A number of studies (*cf.* McPeak & Little, 2005) have shown that increased mobility has a relationship with decreased herd loss[42]. In the context of increasing drought frequency, this suggests that low wealth families without livestock holdings sufficient for mobile subsistence production may struggle to remobilise.

Table 4.2 Household Mobility Status and Wealth Category[43].

		Mobile		Split		Settled	
Wealth	n	n	%	n	%	n	%
High	38	14	36.8	12	31.6	12	31.6
Medium	42	16	38.1	9	21.4	17	40.5
Low	58	17	29.3	2	3.4	39	67.2
Overall	138	47	34.1	23	16.7	68	49.3

[42] It can be speculated that this relationship is based on a combination of factors associated with mobile herds: superior livestock diet and health; less density dependent diseases; and the ability to exploit a larger geographical scale in the event of drought.

[43] Percentages in table 4.2 are for comparison horizontally, they represent the mobility status of families within a given wealth category. Percentages cannot be compared vertically as they do not represent the wealth categories of families within a given mobility status.

Table 4.1 shows that low wealth families are roughly half as likely as high wealth families to comprise two or more households (34.5 percent compared with 68.6 percent respectively). However, table 4.2 shows that low wealth families are proportionately far less likely to employ a household splitting strategy. This suggests that household splitting is a livelihood strategy that requires a level of wealth which exceeds that necessary to marry a second wife. It seems that low wealth families comprising multiple households will not typically pursue a splitting strategy even when they are theoretically able to do so. This implies that household splitting is either not the most productively efficient strategy or that other factors discourage household splitting among the poorest. Split families appear to be sacrificing productive efficiency for access to services and the comforts of settlement. This theory is consistent with the data on respondent livestock holdings in table 4.3[44], which clearly shows that households employing a split strategy have the highest livestock holdings in each wealth category, even accounting for the outlier[45].

Table 4.3 Livestock Wealth (TLUs) and Household Mobility Categories

Wealth	n	Mobile	Split Incl. Outlier	Split No Outlier	Settled
High	33	45.9	103.5	53.8	39.8
Medium	41	9.5	13.7	13.7	9.1
Low	54	4.3	7.3	7.3	3.7
Overall	131	16.8	58	32.2	11.4

Wealth constraints on household splitting limits the ability of low wealth families to simultaneously maximise herd production while accessing resources and services associated with settlement. For families able to employ household splitting, the

[44] One TLU is regarded as equivalent to 1 camel, 1.43 cattle, and 10 sheep or goats.

[45] One respondent in the split mobility category owned 600 TLU which was 350 percent more than the second largest livestock holding (170 TLU). In the interests of representativeness, the outlying respondent was removed from the dataset, although for comparative purposes the complete dataset (including the outlier) has also been included in table 4.3.

settled household can graze some milking stock around the homestead during the wet and early dry seasons, while relying on purchased food, food aid and occasionally cultivation, to make up the remainder of their consumption needs. The mobile household mainly consumes milk, but depending on the herd size and season, they may also need to supplement their diet with purchased food or food aid. By ensuring that most of their livestock production is consumed by the family (as opposed to cattle camp herders), households able to pursue this strategy are utilising their assets for subsistence while also accessing the benefits associated with settlement. Such households can also utilise cattle camps to further enhance the condition of non-milking stock[46]. During the driest parts of the year, when the majority of the herd are without milk, almost all the cattle are placed in the camps and the mobile household often settles temporarily with the other household.

While household splitting appears to be a distinct livelihood strategy available primarily to more wealthy households (with sufficient livestock wealth and at least two wives), there are other livelihood strategies which achieve the same benefits through use of the extended family.

> *"Now I move every 3 years just a little distance because animal dungs become many. I stopped moving with my animals in 1998* [El Niño]. *My children now move with their families. I settled in 1998 because I didn't have strength for moving, I look after my grandchildren who go to the school"*
>
> Respondent 13 (low wealth)

In families with one or two mobile households, an elderly or infirm relative (who is not able or willing to remain mobile) will often settle and fulfil the role of the settled household in the split household strategy. The settled relative can house children attending school as well as collecting the mobile household's food aid allocation[47]

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[46] Subject to sufficient labour supply/ ability to employ labour, or adequate social capital in order to put their herd in somebody else's cattle camp.

[47] Food aid allocations to medium wealth households can be substantial as will be described later in the chapter. While many relief committees allowed collection by an extended family member, household mobility generally reduced a family's food aid allocation.

(storing it for them until they are able to collect it or consuming it themselves). It is therefore important to recognise the use of the extended family as an alternative form of household splitting in any analysis of livelihood strategies. Analysis based exclusively on the household mobility of the immediate family has the potential to misrepresent livelihood strategies and access to services.

Multi-household mobile families who choose to remain together throughout the year, can subsist from the herds to a greater extent than split households. In the wet season there may be a surplus of milk which is too much to be consumed by one household and cannot be transported to the settled household, stored (except as ghee), or sold. This represents a 'inefficient surplus' in the production system as the settled household will not have adequate milk throughout the dry seasons and may have to purchase food despite the surplus production from the mobile herd. For one household mobile families, production surplus is not a major concern as all household members' consumption needs are being met without the need to sell livestock to buy food (in addition to, or in the absence of food aid).

Therefore, the most efficient production strategy is to maximise livestock production and minimise any 'inefficient surplus' (when surplus must be substituted for purchased food or food aid). Maximising livestock production by targeting non-uniformly distributed nutrients and water, and minimising production surplus by ensuring all family members move with the herds, is in conflict with current service provision. Public service provision in the drylands is typically sparse and static which serves to constrain mobility. This is particularly true for families who are seeking to diversify their livelihoods (e.g. by investing in education) in response to falling herd size.

4.5.2 Options For Low Wealth Families

For low wealth households the options are more limited in terms of household and herd mobility. Many low wealth households do not have herds sufficient to enable mobile subsistence production even in the wet seasons (see table 4.3 for average herd

sizes). Many households choose to settle and place their livestock in the herds of friends and family so that they are not adversely affected by the lack of grazing around the settlement.

> *"The urane* (cattle camp) *moves most in the short rains- I don't pay the herder because I don't have many heads- it's a favour from a relative"*
>
> Respondent 36 (low wealth)

> *"If I get rain in the long rains I'll stay and cultivate, if not I move* [my house] *once or twice. During the long dry season I am in Aboye and I don't move. I have few heads so I give them to someone who moves. In the dry season there is not much milk anyway […] I consider myself settled because I move but then I come back"*
>
> Respondent 58 (low wealth)

This means that they cannot consume the milk produced by their livestock for large parts of the year, although livestock may be brought back to the homestead for milking at the start of the long wet season (when the majority of calves are borne). The ability to utilise cattle camps or 'host herds' is not possible for all low wealth households and depends on family ties and social networks. Table 4.4 outlines use of cattle camps by families of different wealth categories.

Table 4.4 Utilisation of Cattle Camps by Respondents in Different Wealth Categories

Wealth	n	Using Cattle Camp	Percent Using Cattle Camps
High	30	30	100
Medium	40	36	90
Low	43	34	79.1
Overall	113	100	88.5

Some low wealth households remain mobile for parts of the year during which good grazing is available. They are able to subsist from the herd with minimal

supplementary food. The key decision for low wealth families is whether to settle in the town/village permanently or whether to settle near to the village for part of the year but remain mobile when production and subsistence advantages can be gleaned by moving the household with the herd. In addition to the production and consumption advantages of household mobility, keeping milking livestock mobile during the wet season can also have beneficial effects on animal health:

> *"Since we have been settled the calves can die because there is not enough grass for our animals. Also animals don't get pregnant as quickly"*
>
> Respondent 42 (medium wealth)

Wilson and Clarke (1976) reported that in Southern Darfur, calf mortality was almost four times higher in settled herds. Families with herd sizes that are around the limit for viable household mobility are conceptualised in this chapter as 'threshold households'. In the following sections, the wealth dynamics of 'threshold households' will be further defined and their importance as a focus for development interventions outlined with reference to secondary data sources.

4.5.3 Mobility Decline and Settlement

Per capita livestock holdings for many pastoralist communities are declining (ALive, 2006; Niamir-Fuller & Turner, 1999). For example, Lybbert *et al.* (2004) report that average herd sizes among Boran pastoralists halved between 1981 and 1997. A similar decline in livestock numbers was demonstrated in Marsabit District by Deitz *et al.* (2005). The reasons for this trend are complex and numerous but some of the main drivers are: increasing drought frequency (Oxfam, 2009); privatisation of rangelands (Mkutu, 2004; Cullis & Watson, 2004; Roth & Fratkin, 2005); economic and political marginalisation; inadequate access to services and markets (Swallow, 1994); and population increase (Sandford, 2006). As well as falling herd sizes, production per livestock unit has also been declining (Ehui *et al.* 2002; Coppock, 1994). Pastoralist herd loss due to severe drought events generally comprises 50-80 percent loss of cattle, and 30 percent loss of sheep and goats (Lybbert *et al.* 2004). Based on data from 63 respondents in the current study, cattle losses during and

immediately after the 1984 drought were 70.9 percent while sheep and goat losses were 64.2 percent. Similar losses were reported for Turkana herds during the 1979/80 drought (Ellis & Swift, 1988). Recovery from these losses can be relatively rapid (within 4-5 years according to Ellis & Swift (1988)) although the other factors mentioned above can impair this recovery rate, particularly the advent of further drought events during the recovery phase. The herd size necessary to ensure post-drought holdings sufficient for recovery is discussed in the following section.

Falling herd sizes have contributed to a decline in the frequency and distances of herd movements over the last century (Niamir-Fuller, 2000; ALive, 2006). Frequency and distance of household and herd movement (in cattle camps) depend on a number of factors other than herd size although as the data in tables 4.5 and 4.6 demonstrates, there is a positive relationship between wealth (and thus herd size) and mobility. The diversity of motivations for household mobility have been discussed above, although in terms of frequency and distance, mobility is primarily motivated by the abundance and patchiness of forage. Respondents reported that forage may be more patchily distributed in seasons of intermediate dryness, and migrations are consequently more frequent (Coughenour, 2007). Very dry seasons generally necessitate fewer but longer distance movements if livestock mortality is threatened. This pattern of mobility has also been observed among Turkana pastoralists in northern Kenya (McCabe, 2004).

Table 4.5 Number of Seasonal Movements and Range of Household Mobility by Wealth Category

Wealth	n	Short Rains	Long Rains	Long Dry Season	Mobility Range (Km)
High	10	3.90	2.30	2.80	54.47
Medium	17	3.88	1.35	1.65	41.69
Low	16	3.59	1.54	0.00	35.70
Overall	43	3.78	1.65	1.22	44.90

Table 4.6 Number of Seasonal Movements and Range of Cattle Camp Mobility by Wealth Category

Wealth	n	Short Rains	Long Rains	Long Dry Season	Mobility Range (Km)
High	5	7.80	5.00	6.67	108.00
Medium	8	7.00	5.60	4.00	88.16
Low	10	5.30	2.67	3.11	81.94
Overall	23	6.43	4.05	4.00	91.73

In order to generate the data in tables 4.5 and 4.6, respondents were asked about household and herd movements over the preceding three years. Respondents struggled to remember the exact number of movements, particularly because distances were often only a few kilometres. The resultant data is, however, regarded as generally reliable despite being based in many cases on respondents' memories of the season rather than the specific number of migrations.

The data on movement frequencies falls neatly into a pattern of decreasing mobility as household wealth decreases, although this pattern belies the variation in responses and the problematic nature of the expressing frequency of movement as an average figure. Averages are potentially misleading in the context of a highly variable environment such as Africa's drylands. The data presented demonstrates that families with larger herds exhibit more frequent mobility over a larger area but the figures (averaged over three years) do not represent a very useful abstraction in themselves, rather they are intended primarily for comparative purposes between wealth categories and between seasons.

A trend towards increasing settlement was described by respondents. Ensminger (1992) reported a similar trend in Wayu Location (Galole Division, Tana River District) based on a longitudinal dataset spanning 14 years. Data from the present

study demonstrated that among 68 ‘permanently’ settled respondents, the reasons stated for settlement (see table 4.7) were largely focused on a few key themes.

Table 4.7 Permanently Settled Respondents’ Reasons for Settling

Reason	Frequency*	% of Respondents
Education	42	53.2
Herd Loss	34	43.0
Old Age/ Illness	20	25.3
Convenience	5	6.3
Business/Work	4	5.1
Food Aid	4	5.1
Cultivation	1	1.3
Forced	1	1.3

* Respondents frequently cited multiple reasons for settlement which accounts for the discrepancy between sample size and number of responses.

The importance of education in household mobility as well as broader livelihood strategies is examined in detail in the subsequent two chapters. Despite education being most frequently cited by respondents as their motivation for settling, a significant loss of livestock often preceded the decision to settle. In this sense, it was felt by the author that during the interviews respondents preferred to highlight a positive or active reason for settlement rather than a negative or reactive motivation. This feeling was borne out by the fact that during more detailed enquiries about the settlement process, respondents typically referred to herd loss precipitating the decision to settle and enrol children in school. Indeed, 73.7 percent (84/114) of respondents stated that regardless of school they would remobilise if they had sufficient livestock. Many respondents suggested that if they did have sufficient livestock they would employ a household splitting strategy to allow some of their children to continue their schooling. Few low wealth respondents favoured the

settled life exclusively, with many referring to the emotional trauma of losing their herds and the need to "have another line if a drought like 1984 comes again". Other factors mentioned by the 26.3 percent of respondents who did not wish to remobilise, regardless of herd size were: old age; illness; and elderly relatives.

In order to explore the triggers for settlement, the years in which respondents permanently settled were recorded such that any correlation with severe drought events could be assessed. Figure 4.1 shows two main spikes of settlement which correspond to the severe droughts of 1984/85 and the destructive El Niño rains of 1997. The drought of 2001/02 initiated a sustained period of settlement which has been compounded by the drought in 2008/09.

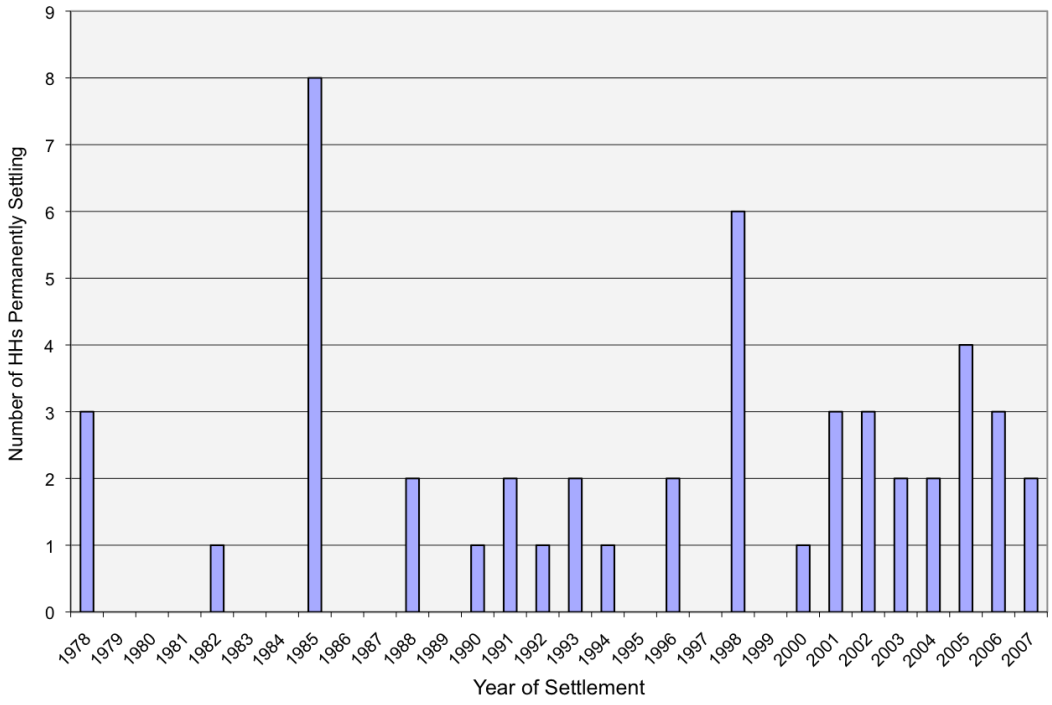


Figure 4.1 Respondent Settlement History

4.6 Mobility and Livelihood Thresholds

Socioeconomic and ecological 'thresholds' are the subject of intensive study (Walker & Meyers, 2004), particularly because of their respective importance in defining

poverty traps (Carter & Barrett, 2006) and climate change dynamics (CCSP, 2009). In this section, the effects of herd size thresholds on subsistence production viability and resultant wealth dynamics will be examined. Below a certain number of animals, a herd cannot produce sufficient milk and other products (traded and consumed) to sustain the family. When a family's livestock holdings drop below this threshold, settlement can be the only option in the absence of alternative income sources or well-functioning safety nets (either endogenous or external assistance), which ensure that short-term shocks to the system do not have permanent consequences (Barrett & Maxwell, 2005). If social insurance mechanisms such as livestock loaning or food aid are not in place to defend critical asset thresholds then settlement with a small herd frequently implies a downward spiral into extreme poverty (Lybbert *et al.* 2004). This scenario is especially bleak when there are few non-pastoral opportunities in settlements, particularly for stockless and illiterate pastoralists (McPeak & Little, 2004).

4.6.1 Thresholds and Endogenous Assistance

Pastoralists are well-aware of the existence of critical asset thresholds (Zimmerman & Carter, 2003) and have been shown to target social assistance mechanisms, such as livestock loaning, at families just below the threshold herd size (Santos & Barrett 2006a, 2006; Little *et al.* 2001), for whom a viable herd can be restored and support will be most effective. From the perspective of wealthier families, loaning livestock, as well as strengthening social bonds, allows pastoralist families who have lost their herds to remain part of the mobile group and contribute to herding activities, well-digging, and the common defence of the herds and grazing areas (Lybbert *et al.* 2004).

> *"I move with a group- to move alone is difficult because of security"*
>
> Respondent 23 (low wealth)

> *"In the dry season, many people depend on the road to get food from Mutha. When big rains come and dams fill and roads get bad, the less abled* (less wealthy) *assist the abled* (more wealthy) *with herding in exchange for milk"*

East African pastoral societies have a variety of social mechanisms that encourage transfer or loan of animals to family or clan members (Huysentruyt *et al.* 2004; Spencer, 1998; Ensminger, 1992; Little, 1992; McCabe, 1987; Schneider, 1979). In a situation whereby a large number of families fall below the threshold for subsistence viability, the capacity of social assistance mechanisms can be overwhelmed (Robinson & Berkes, 2010). Respondents reported that due to both the declining herd sizes and increasing settlement of pastoralist communities, livestock loans to low wealth household have declined both in the size and prevalence of transfers. A similar trend has been reported among other pastoralist groups (*cf.* Huysentruyt *et al.* 2004). Loaning livestock to low wealth families who have recently settled, is often not sufficient for them to remobilise, and the health of the loaned livestock would be compromised by the lack of good quality grazing around settlements. While the proportion of respondents receiving loaned livestock was roughly equal for settled and mobile low wealth families, the size of transfers (TLUs) was almost double for mobile families. It is likely that this reflects the lower risk of loaning to mobile families (mobile livestock are typically more healthy than settled livestock (Wilson & Clarke, 1976; Fratkin & Roth, 2005) and the inefficient production of sedentary milking stock. Thirty respondents from the total of 140 (21.3 percent) had received livestock as long-term loans, while nine respondents (6.4 percent) reported lending livestock to others (always to extended family members). Those receiving were predominantly in the low wealth rank category (68.8 percent) while those loaning livestock were predominantly in the high wealth rank category (60 percent), the remainder coming from the medium wealth category in both cases.

4.6.2 Multiple Asset Thresholds Define Orma Wealth Dynamics

What are termed here ‘subsistence thresholds’ are not constant and are the product of a number of key variables that affect the productivity of assets (grazing quality, the skill of the herder, seasonal rainfall, and household consumption requirements), as well as being buffered by social assistance mechanisms. Over time, however, a

reasonably stable minimum threshold can be established. There seems to be a general consensus in the literature that a minimum of around three TLUs per family member is sufficient in pastoralist systems to satisfy daily energy requirements from the herd's flow of milk and blood (Upton, 1986; Pratt & Gwynne, 1977; Simpson & Evangelou, 1984; Coppock, 1994; van Raay, 1975; Assefa, 1990; Desta, 1999). Other authors have suggested considerably higher figures (Bremaud & Pargot, 1962; Dahl & Hjort, 1976; Sandford, 1982) although these estimates generally refer to more arid systems whereby herd sizes necessary for viable subsistence production are significantly higher. The quotes below represent respondents' views on the cattle herd size necessary for mobility, although this is not necessarily the 'subsistence threshold', as herd size estimates may assume on-going receipt of food aid and other forms of assistance which supplement subsistence production.

"The life of before was good, before people had enough heads. Now if I milk 10 for each house there is still a problem. Before, 4 milking cows could be enough for one house"

Respondent 54 (high wealth)

"I used to move a lot when I had a good number of livestock. I settled after the 92 drought […]. The life of moving is better- animals are stronger and produce more milk, and they get pregnant earlier. If you take to the market you will get good money. If I had enough heads I would return to moving. If I had 20 or 15 or even 10, maybe if I even had 5"

Respondent 71 (low wealth)

"*For a life of moving you need to have about 20 heads"*

Respondent 115 (medium wealth)

"I stopped moving after 84. I lost all my livestock. Before I settled I moved my house far. I would move with my animals again if I had enough. Even 10 is enough."

Respondent 70 (low wealth)

It was not possible to establish a guideline subsistence threshold for Orma families based on estimates of per person TLUs necessary for subsistence through consumption and trade. This is party because data collection was not focused to this end, but also because many families around the subsistence threshold were receiving food aid, loaned livestock or other forms of assistance. This complicates estimates of subsistence production potential, particularly due to the reduction in mobility (and therefore production) necessary to access services. However, further work focused on the establishment of key thresholds for different families could be of value in advancing the state of knowledge on pastoral wealth dynamics and livelihood strategies. This in turn may provide some useful insights on how best to identify and target support for pastoralist families around the subsistence threshold. A more focused study could examine the factors which substitute for a viable subsistence herd in satisfying family consumption. These factors essentially differentiate the subsistence threshold and what can be termed the 'poverty threshold'. The subsistence threshold refers to the number of TLUs per person required for viable subsistence production (both traded and consumed), whereas the poverty threshold incorporates a wider range of factors which combine to define household wealth dynamics.

Defining a family's poverty threshold requires assessment of the amount of food aid received and any restriction on mobility required for collection and continued inclusion on the relief food list. A similar assessment must be made of education services. The number of children in school, the cost, the labour substitution effect, and any constraint in household mobility should be incorporated in the assessment. Another key factor in defining the poverty threshold is the level of endogenous assistance (in the form of livestock loaning etc.), alternative production (e.g. cultivation), and cash income from employment and livestock sales. The poverty threshold is therefore much more difficult to quantify than the subsistence threshold but is a potentially useful concept, particularly as it serves to define the key stages of entry into the 'poverty trap'.

Among respondents, the poverty threshold was closely linked with maintenance of household mobility. For a family with asset holdings around the poverty threshold, it is more productively efficient to consume all of their herds milk rather than putting their livestock in the herd of a friend or neighbour, or in a cattle camp, and sacrificing consumption which must be replaced by supplementing food aid with purchased food. The livestock sales necessary to generate cash to purchase food compromise asset accumulation. In practise, falling below the poverty threshold is often synonymous with a change in household mobility status whereby settlement leads to the dominance of decumulation wealth dynamics (the poverty trap).

In addition to the subsistence and poverty thresholds discussed above, there is also what is termed here an 'insurance threshold'[48] at significantly higher levels of livestock holdings. Families with assets above the insurance threshold are likely to remain with a herd size above the subsistence threshold even in the event of a severe drought. Lybbert *et al.* (2004) produced data for pastoralists in Southern Ethiopia which suggests that the subsistence and insurance thresholds can be theorised to be roughly 15 and 75 head of cattle respectively. Figure 4.2 illustrates the herd size thresholds and wealth dynamics discussed above. The distance between the insurance and subsistence thresholds, represents the average proportion of herd loss in severe drought years. The distance between the subsistence and poverty thresholds represents (in livestock terms) the combined inputs of: external support; alternative income sources; local assistance mechanisms; and the provision of informal credit, to the household economy. These various inputs and forms of support can facilitate the maintenance of household mobility below the subsistence threshold.

[48] Insurance thresholds may be conceptualised as 'internal insurance thresholds' because it refers to the ability of a family to respond to shocks while maintaining a herd size adequate for subsistence, in the absence of any forms of 'external' assistance or alternative income sources.

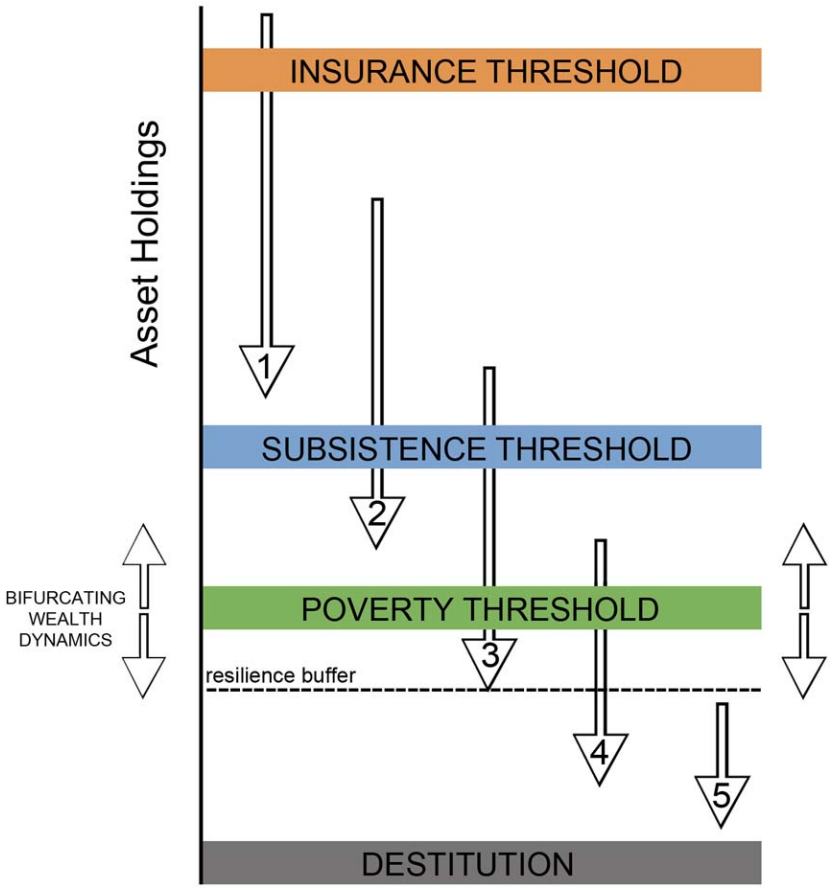


Figure 4.2 The Effects of Herd Loss and The Role of Thresholds in Defining Poverty Traps

The position (in terms of asset holdings) of the insurance and subsistence thresholds depicted in figure 4.2 are defined by: environmental factors; herd size; the skill of the herder; and the terms of trade[49]. As described above, the poverty threshold is defined by a broader set of factors incorporating external support (e.g. relief food) and social capital (e.g. livestock loaning). The numbered arrows in figure 4.2 represent severe herd loss (due to a climatic event or disease epidemic) and the resultant impact on family wealth status and how this can be mediated in the medium term by a range of threshold effects. Arrow one in figure 4.2 illustrates that families with livestock holdings above the insurance threshold are able to endure a severe herd loss while

[49] Trading livestock products to purchase grain allows pastoralists to subsist from smaller herds due to the higher cash value of meat and milk compared with an equivalent caloric amount of grain (Little, 1992; Zaal & Dietz, 1999).

maintaining livestock holdings above the subsistence threshold. The second arrow shows a family below the insurance threshold, that is left relying on either external support, local assistance mechanisms, or credit, to re-establish a herd size adequate for subsistence production. Arrows three and four represent families whose asset holdings fall below the poverty threshold. The family represented by arrow three is left with livestock holdings within the resilience buffer zone such that by utilising various forms of support and credit, they should be able to re-establish a viable herd by remaining mobile. The future is less certain for the family represented by arrow four as they are left with a level of livestock holdings whereby wealth dynamics become dominated by negative feedback effects. In the absence of significant levels of assistance or alternative income or consumption sources (e.g. employment or cultivation), this family's reliance on external support is likely to increase as their remaining herd is gradually sold off to supplement consumption. The fifth arrow represents a highly dependent low wealth family that experiences further herd loss, pushing it closer to destitution. This broad typology of asset threshold effects operating among respondent families forms the basis for the analysis of data in the remainder of the chapter and comprises a key component in the development of the 'Pastoral Livelihood Strategy Framework' in Chapter Six.

4.6.3 Thresholds and Resilience

The drylands are characterised by their highly variable nature, which is the basis for the pastoral system's productive efficiency (Behnke *et al.* 2003). Consequently, recurrent shocks and periods of recovery are integral to pastoral livelihood strategies. Resilience[50] is an important concept in pastoral livelihoods (Robinson & Berkes, 2010) as it describes a number of factors which collectively define a family's ability to recover from shocks. The resilience of a family's livelihood has a number of components. Livestock wealth increases the likelihood that a viable herd will survive after a shock, human capital enhances production, and social capital can facilitate

[50] 'Resilience' is the capacity of a social-ecological system "to tolerate disturbance without collapsing into a qualitatively different state that is controlled by a different set of processes" (Resilience Alliance, 2011).

food sharing and livestock loaning. All of these components of livelihood resilience influence a family's ability to recover assets required for viable pastoral production in the medium-term. Resilience is a dynamic property, subject to change with the nature of the shock. In the pastoral context, covariate shocks[51] reduce the resilience of communities and cause more permanent consequences than idiosyncratic shocks due to the weakening of assistance mechanisms reliant on social capital.

Resilience defines the extent of the buffer zone around critical herd size thresholds (see figure 4.2 above). In a resilient system, a household may approach a threshold or even drop below it in the short-term while still managing to recover and begin to rebuild their herd. In a non-resilient system households dropping below the poverty threshold will often not recover due to the negative feedback effects which take hold in the absence of assistance mechanisms, access to credit, and alternative income and consumption sources. As resilience declines, the amount of system disturbance needed to cross critical asset thresholds declines. Lybbert *et al.* (2004) found that the lack of effective safety nets for Ethiopian pastoralists meant that for families with herd sizes of 15 cattle or below, a drop in herd size of 25 percent, resulted in two thirds of them being unable to recover to pre-shock holdings within three years. This was a familiar story among Orma respondents who frequently cited herd loss and lack of herd growth as a motivation for settlement.

The critical nature of asset thresholds in pastoral systems is due to important changes in system feedbacks which occur above and below the threshold (Reynolds *et al.* 2007). This change or *bifurcation* of feedback dynamics is the basis for what are described as 'poverty traps' (Carter & Barrett, 2006) which define poverty thresholds. Once a family's assets have dropped below the poverty threshold and they decide to settle, a number of negative feedback effects take hold. Livestock production, health, fertility and survival, decline if livestock are grazed around the

[51] In the social science literature (as opposed to the use of the word 'covariate' in statistics) 'covariate shocks' refer to unpredictable adverse conditions or events which affect everyone within a wide geographical area. While the secondary effects of a covariate shock are mediated by a family's resilience, the shock itself is experienced by the whole community.

settlement (Wilson & Clarke, 1976; Fratkin & Roth, 2005). If livestock are placed in a cattle camp, the production is unavailable for consumption. Both strategies necessitate increased frequency of livestock sales to supplement consumption, resulting in a slow decline in herd size which compromises a return to herd growth and subsistence production. Even if these effects are minimised, some of the benefits associated with settlement (education, comfort, school feeding, food aid and maternal health food aid) serve to reduce the motivation to return to subsistence production as household mobility with inadequate livestock can require a sustained reduction in consumption until herd size recovers.

A number of poverty traps have been described in the economics literature, along with a variety of mechanisms through which they manifest in different communities (*cf.* Barrett & Swallow, 2006; Bowles *et al.* 2006; Carter & Barrett, 2006; Azariadis & Stachurski, 2007). Certain poverty traps are defined by the bifurcation of system dynamics above and below a critical asset threshold (referred to here as the 'poverty threshold'). Poverty traps of this kind are characterised by asset accumulation above the threshold and by decumulation below the threshold (Tache & Sjaastad, 2010). Describing the difficulty faced by families in breaking out of poverty traps, Lybbert *et al.* (2004) present data on pastoralists in Southern Ethiopia, which shows that families in the bottom quartile (in terms of herd size) had a 92 percent probability of remaining within that quartile for the next ten years. In order to avoid descending into poverty traps, pastoralists engage in asset-smoothing behaviour[52] to protect their asset base as it approaches the critical threshold whereby system dynamics shift to incorporate negative feedback effects (Zimmerman & Carter, 2003). The following section will examine the role of service provision and infrastructure in defining both asset thresholds and livelihood strategies among respondents.

[52] Asset-smoothing refers to the adjustment of consumption levels, to keep asset holdings constant.

4.7 Service Provision and Infrastructure in the Drylands

With the exception of education (dealt with separately in Chapters Five and Six), this section will look at service provision and infrastructure in Tana River District. In Kenya, pastoralist districts have the highest incidences of poverty and the least access to basic services of any in the country (Oxfam, 2008). The importance of service provision to poverty reduction is underlined by the central role 'service access' plays in the assessment of human welfare by international development agencies (UNDP 2010; ; Sisule 2001; Ravallion 1993). The need to access services can constrain pastoral mobility, while inadequate infrastructure (transport and communication) can limit market access and information, thereby reducing the viability of the pastoral production system. Loss of production occurs when services are provided in a way which necessitates withdrawal of labour from the production system (e.g. to enrol children in school), or reduces freedom of movement.

Secondary data presented in Chapter Three described access to education, health and security services in Tana River District[53]. There are important drawbacks to using simplified conceptions of service 'access'. Calculating 'theoretical access' to health services, for example, on the basis of geographical proximity to a road leading to a health clinic is often a poor indicator of 'practical access'. Service access by mobile households is not accurately captured by snapshot assessments based on their position at one point in time. In reality, access to a health clinic is also mediated by a number of other factors such as the perception and cost of health services, and the availability and cost of transportation. Therefore, particularly for mobile or remote populations, data concerning access to services must be interrogated carefully.

The presence of a robust infrastructure and good quality services promote development of human capital and commercial investment (Mortimore *et al.* 2009; Boone *et al.* 2007). The severe lack of either public or private investment in infrastructure or economic development in the drylands mean that there are very few

[53] Data on 'service access' and use is unlikely to be very reliable in pastoralist areas due to the reasons outlined in Chapter Two concerning poor quality data.

opportunities for income diversification. In Kenya, market liberalisation and the pressure of structural adjustment have meant a severe contraction of public services in the drylands (Niamir-Fuller & Turner, 1999; Nori *et al.* 2005; Sifuna, 2005; Otieno & Colclough, 2009). Government spending has become skewed towards high growth sectors and high potential areas (UNDP 2001, Akcura *et al.* 2002, Adelzadeh *et al.* 2003). Although pastoralism is a viable and sustainable economic activity, the various pressures bearing down on pastoral production due to political, economic and climatic factors, mean that the role of public and private services in facilitating access to alternative and diversified livelihoods will become increasingly important as some people inevitably drop out of pastoralism.

4.7.1 Health and Veterinary Care

Healthcare Services

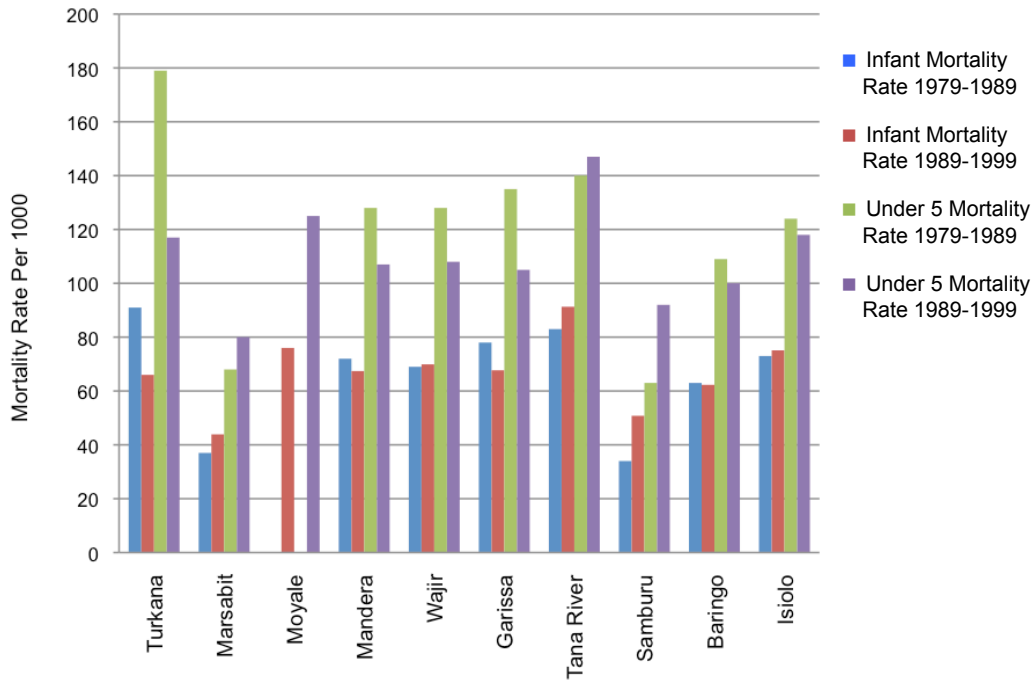
Public resources invested in health systems in many developing countries are geographically centralised into technically sophisticated high-cost urban hospitals and are designed primarily for the healthcare needs of the urban elite (Zaidi, 1994). A growing body of literature suggests that ill-health frequently accounts for a transition into persistent poverty (Krishna, 2006; Kristjanson *et al.* 2004). Costs associated with medical treatment can necessitate emergency livestock sales at poor terms of trade which can be particularly damaging for 'threshold families' who may also have to settle and withdraw children from school during convalescence. More accessible and affordable healthcare can protect valuable human and livestock assets that underpin family well-being (Little *et al.* 2007). Despite a considerable amount of research on healthcare service utilisation in both health geography and sociology, very few studies have considered the factors mediating access and use of health services by pastoralists (Spicer (1999) is a notable exception). A critical failure of healthcare provision in the drylands is the poor coverage of preventative medicine programmes such as child vaccinations. Children from mobile families often do not receive all of their vaccinations and courses are frequently not completed. For mobile groups, the accessibility of health services varies over time such that medical

complaints or birthing complications may be dealt with much more rapidly at certain times of the year (Spicer, 1999).

Tana River District has 57 health facilities concentrated in the district's few towns. The majority of the population live over 50 km away from the nearest clinic with only sporadic and costly transportation links available (GoK, 2005). In addition to this, shortage of drugs, corruption, lack of diagnostic facilities (like x-ray machines), all adversely affect provision of quality healthcare. The doctor to patient ratio was 1:95,500 in 2004 with the vast majority of doctors concentrated in a handful of urban centers (GoK, 2005). In both Tiltila and Waldena there were health facilities, while in Kalalani there was none. In Tiltila, the African Inland Church provide a subsidised health clinic staffed by a male nurse. In Waldena, work was underway on a more comprehensive health facility although there is already a small maternal health clinic which also administers the supplementary feeding programme (SFP). The SFP was started in January 2007 by the Ministry of Health and supported by UNICEF. It is targeted at moderately malnourished children and pregnant and lactating mothers. The SFP is delivered by the World Food Programme (WFP) and the Kenya Red Cross (KRC) as part of their wider food aid distribution activities. There are 27 SFP distribution points in the district and the number of targeted beneficiaries in 2008 for children 6-59 months old is 1,510 and for pregnant and lactating mothers is 1,999 (ARLMP, 2008).

According to Oxfam's draft *Report on the State of Pastoralism* (ROSP) (2009), 58 percent of households in Tana River District have access to health services (see figure 3.5) which is the fifth lowest of all arid districts. However, as outlined in the introduction to this section, the term 'access' can be misleading as it is difficult to measure meaningfully. A more reliable method of evaluating health services can be achieved by looking at measurable health outcomes such as child mortality, vaccination rates or birthing practises. Mortality rate in particular is commonly used as an indicator of, among other things, access to healthcare and the quality of water

and environmental sanitation (Berger, 2001; Rowe, 1989). Figure 4.3, based on the National Population Census (1999), shows both the infant and under 5 mortality rates for 10 arid districts across two decades. In the most recent dataset (1989-1999), Tana River has both the highest infant (91.3 per 1000) and under five (147 per 1000) mortality rates of any district, both of which have increased significantly from the previous decade.



Source: Oxfam, 2009

Figure 4.3 Infant Mortality in the Pastoralist Arid Districts

Based on data from the United Nations Population Division (2009), the average under five mortality rate in Kenya was 112 per 1000 live births. The fieldwork data on Orma child mortality (under five years) supports the census figures. An average under five mortality rate of 135 compares with census data of 147 indicating a slight improvement, albeit based on unreliable census data (see section 3.3). Reliable data was collected for 83 women who gave birth to a total of 555 live children. Under five mortality rate was correlated with family wealth category, as the data presented in table 4.8 clearly illustrates. It can be speculated that lower mortality rates among

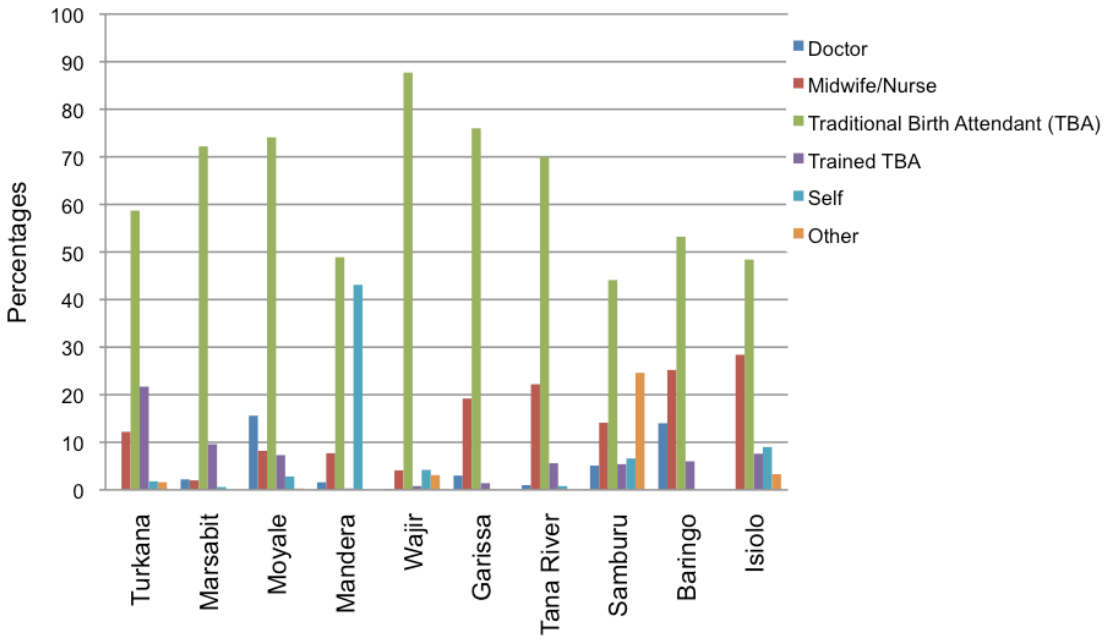
high wealth families are based on the ability to provide a better diet and healthcare to young children. The sample size (83 respondents) for child mortality data was far smaller than the overall sample size (144 respondents) due to several factors. Data on child mortality was only requested when sufficient rapport has been established in order to ask questions of a potentially sensitive nature. Verification of data on child mortality with the mother was often necessary to confirm details (e.g. age at death), although because this was not always possible, the sample size was further reduced.

Table 4.8 Mortality Rates of Children Under Five Years and Female Fertility Rates for Respondents from Different Wealth Categories

	Women	Total Children	Under 5 Child Mortality	Under 5 Mortality Rate Per 1000	Average No. Children Per Woman	Survival Rate Over 5 Years (%)
High Wealth	25	190	22	115.8	7.6	88.4
Medium Wealth	27	171	19	111.1	6.3	88.9
Low Wealth	31	194	34	175.3	6.3	82.5
Overall	83	555	75	135.1	6.7	86.5

Research carried out by the Arid Lands Management Project (ALRMP) (2008) suggests that based on their sample of women in Tana River District, 33.3 percent of deaths of children under five years resulted from delivery complications, 20 percent from acute respiratory infection (ARI), 16.7 percent from malaria and 13.3 percent from diarrhoea, the remainder resulted from a range of other causes. This data emphasises the role of professional and trained birthing attendants in reducing the primary cause of death for children under 5 years. Data from Oxfam's draft ROSP[54] (2009) presented in figure 4.4 illustrates the lack of support received by birthing women in Kenya's arid districts.

[54] Figures are based on data from the 'Kenya Integrated Household and Budget Survey 2005/2006' (GoK, 2006).



Source: Oxfam (2009)

Figure 4.4 Delivery by Type of Birth Attendant in Kenya's Arid Districts

The correlation between wealth status and child mortality in table 4.8 does not necessarily imply any causality. The role of other factors related to family wealth status may be more significant in determining child mortality than wealth status in itself. A family's mobility status is closely correlated with its wealth status (see table 4.2) and both factors affect child mortality rate. Comparative research has found that among mobile pastoralists, nutritional status and health conditions are considerably better than those found among settled pastoralists (Nathan *et al.* 1996; Campbell *et al.* 1999; Shell-Duncan & Obiero, 2000). The poor health conditions in settlements are attributed to the exponential increase in communicable disease transmission associated with population density, and lack of adequate healthcare services (Sheik-Mohamed & Velma 1999; MacMahon & Trichopoulos, 1996). Members of a settled family can therefore be regarded as having a greater risk of death from ARI, malaria, tuberculosis, diarrhea, and other communicable diseases (Dyer, 2006).

Low wealth families are more likely to be settled than high wealth families (67.2 and 31.6 percent respectively (see table 4.2)). Therefore it is difficult to establish the relative importance of wealth and mobility in reducing child mortality. The strengths of the various correlations cannot be disentangled from each other, or from likely secondary causal factors such as the education and knowledge of the mother etc. Table 4.9 shows that family settlement is correlated with an elevated rate of under five mortality, as compared to mobile families. Data for split families was not included in table 4.9 because individual children could not be assigned to the mobile or settled household within the split family structure.

Table 4.9 Female Fertility and Mortality Rates of Children Under Five Years of Age for Settled and Mobile Families

Mobility	Women	Total Children	Under 5 Mortality	Mortality Rate Per 1000	Children Per Woman	Survival Rate Over 5 Years (%)
Settled	49	326	50	153.4	6.7	84.7
Mobile	19	102	9	88.2	5.4	91.2

The sample size on child mortality is not sufficient to disaggregate the data simultaneously by wealth and mobility categories, although comparing tables 4.8 and 4.9 does shed light on the relative effects of settlement and wealth on child mortality. Mobile families had an under five mortality rate of 88.2, which is by far the lowest rate for any wealth or mobility category. The fact that it is so much lower than the high wealth families rate of 115.8 suggests that while wealth does improve child survival (through better access to food, healthcare and medicine), household mobility also plays a significant role in improving child survival (through a more nutritious diet and a lower prevalence of communicable diseases).

The crucial importance of family labour supply to the pastoral production system, underlines the important contribution health services can make to strengthening

safety nets and protecting critical asset thresholds (Little *et al.* 2007). The high levels of ill-health and mortality among low wealth and settled pastoral families emphasises the inadequacy of state of health services, which constitutes one of the many constraints to successful modern pastoralism in Tana River District.

Veterinary Services

The contraction of veterinary services in Kenya's drylands caused by austerity measures associated with the IMF's structural adjustment policies (Naimir-Fuller & Turner, 1999), were arguably more drastic than the contraction of health services. The prevalent perception of pastoralism as inefficient and backward (ALive, 2006), and the lack of coordination among the various pastoral groups into a coherent voting block, resulted in pastoral areas bearing disproportionate levels of cuts in public spending in the 1980s and early 1990s. Accordingly, the focus of livestock policy shifted from veterinary care to the development of ranches and increasing beef productivity per animal (de Haan, 1994, 1998; Pratt *et al.* 1997; Swallow & McCarthy, 2000). This shift in policy had the aim of increasing the production of meat for urban areas while reducing expenditure on public services in the drylands. In Tana River District, veterinary services are coordinated by the District Veterinary Officer (DVO), and two Livestock Officers (LO) who are each in charge of an Assistant Livestock Officer (ALO). This structure represents the full extent of the service for the entire district. The LO with responsibility for Galole Division, stated that it is the job of the ALOs to be in the field while the LOs make occasional visits during vaccination campaigns etc. The importance of veterinary services and the timely availability of affordable veterinary drugs, particularly during periods of drought or during bouts of disease following the onset of the rains (when animals are weakened) is of paramount importance to the future of pastoralism in Tana River District. Factors such as inadequate health and veterinary care, which effectively raise the 'insurance, subsistence and poverty thresholds' of pastoral production, by compromising human and livestock capital (and increasing risk), collectively serve to undermine the pastoralist production system.

4.7.2 Financial Services

Formal financial institutions are generally unwilling to provide services in Africa's drylands, due to their association with poor infrastructure, high transaction costs and high risk. The primary concerns are enforcement of contracts and management of risks in a context where many potential customers lack traditional collateral. Banks and other financial institutions are also subject to supervisory and capital adequacy requirements which penalize banks for lending in the absence of such collateral (Oxfam, 2009). Studies on pastoralists in Ethiopia (Desta *et al.* 2004) have shown the value of access to credit for small-scale producers in increasing production and preventing asset divestiture. The role of credit in supporting vulnerable households in times of stress can therefore be of importance to 'threshold families' struggling to maintain viable pastoral herds. The availability of credit can also support the emergence of local enterprises (Oxfam, 2009). Chapter Three briefly looked at the role of local Orma shopkeepers in extending credit to pastoralists during the dry season. In the absence of any other financial services, particularly during periods when food aid is not available due to flooding, Orma shopkeepers are providing an invaluable service despite the high rates of interest charged. The role of these services has become increasingly important as herd sizes have declined and droughts have become more frequent (Mortimore *et al.* 2009; ALive, 2006; Niamir-Fuller & Turner, 1999; Osbahr & Viner, 2006; GoK, 2002).

Access to credit in the drylands is improving but remains extremely limited (Gamba, 2005). As UNDP reported in 2003b (p.3), "credit continues to go to the credit worthy- those who need it least". In Oxfam's ROSP[55] (2009), 79.4 percent of the population of Tana River District is reported to have access to financial services. As outlined in the introduction to this section, there is a vast difference between what is termed here 'theoretical access' and 'practical access' to services. While it is true that the majority of respondents were able to travel to the district capital (Hola) to enter

[55] Data are based on 'Kenya Integrated Household Budget Survey 2005/06' (GoK, 2007).

the bank, they lack almost all of the criteria required to access the services on offer. Illiteracy, lack of permanent address (or 'proof' of address), lack of collateral (privately owned land, permanent buildings, vehicles), and lack of credit history all conspire to place financial services (especially credit) out of the reach of Orma pastoralists. Livestock wealth is not regarded as legitimate collateral by mainstream financial institutions and the mechanism for accessing loans is not appropriate for pastoralist areas (IIED, 2009).

Lack of financial services places a major constraint on the accumulation of assets by the least wealthy households in pastoralist communities:

> *"I build up debts at shops until the start of the dry season. Sometimes a shopkeeper comes- they negotiate a price- then he takes an animal or sometimes I take animals to Mutha myself, or usually I sell to a middleman locally. I see it as cutting transport costs- expenses to Mutha for one head is high but the middleman takes many"*
>
> Respondent 112 (medium wealth)

> *"During the dry season the people who move take debts at shops for 3 or 4 months- up to 20,000 KSh then they give a bull. Sometimes they (shopkeepers) want payment after a month, or sometimes up to 4 months. Everyone has a friend who is a shopkeeper. They take the heads at a low price- some let you wait until the rains when the head is bigger"*
>
> Respondent 137 (low wealth)

The 2006 Microfinance Act (CBoK, 2011) seeks to encourage the penetration of micro-finance institutions into the drylands by providing greater regulation and support, although thus far little progress has been made. Alternative financial intermediaries such as NGOs and community savings groups etc., have made greater in-roads into dryland communities than commercial micro finance provision, although they are prone to a lack of sustainability, low absorbative capacity, and lack of scalability (Oxfam, 2009).

Alongside innovations such as electronic banking[56] livestock insurance schemes have garnered significant attention in recent years as a sustainable way of extending financial services (with the potential to reduce risk) into the drylands. As opposed to traditional insurance, index-based livestock insurance (IBLI) is more cost effective because monitoring costs are substantially reduced. There is no need for insurance companies to verify the veracity of their customers' claims (which would be highly costly in the drylands), as payouts are triggered by the amount and distribution of rainfall over the year. This makes IBLI products cheaper to develop, administer and trade. The success of several pilot programmes conducted in India, Mongolia and various countries in Africa and Latin America have demonstrated the feasability and affordability of such products (Mahul & Skees, 2006; Carter *et al.* 2008; Mude *et al.* 2010; ILRI.org). As highlighted by Mortimore *et al.* (2009), all insurance schemes face the constraint of covariance in climatic events across wide regions, it therefore remains to be seen whether such initiatives will persist in the long-term although early indications are encouraging.

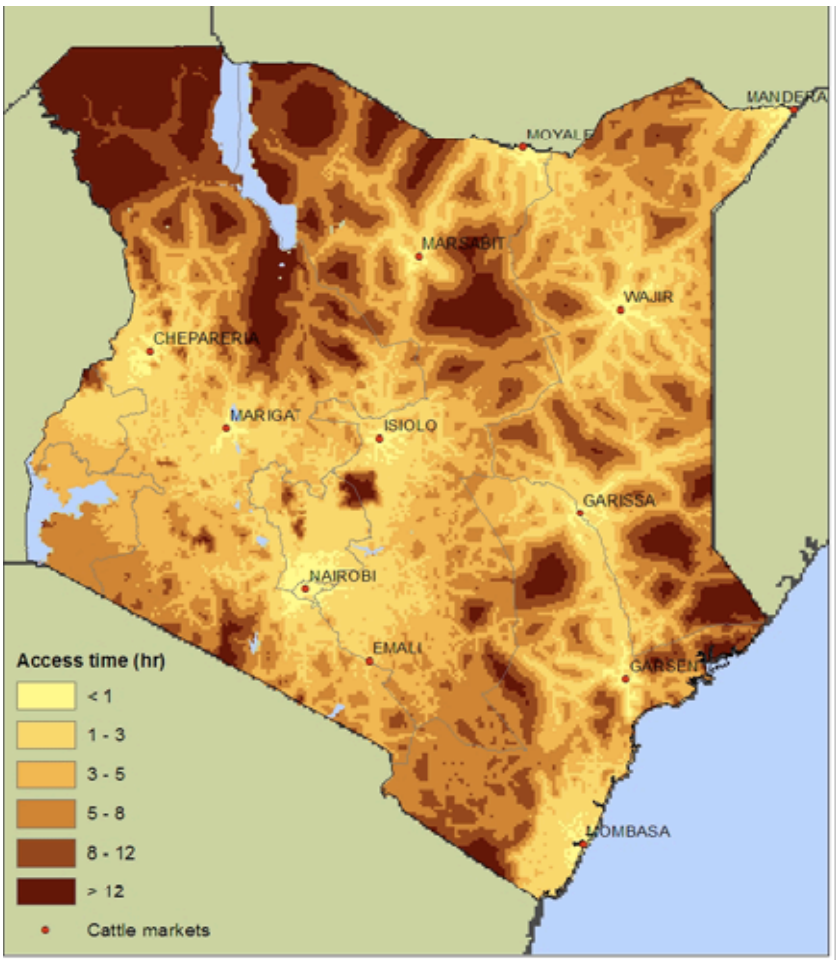
4.7.3 Market Access and Infrastructure

Pastoralists have long traded or sold livestock to purchase food and commodities, especially during dry seasons, although in Africa and parts of Asia this practise is progressively assuming greater importance (Fratkin *et al.* 1999; Swift & Hamilton, 2003; Fratkin, 2004; Norton-Griffiths, 2007). Livestock marketing is growing in significance as a pastoralist livelihood strategy due to declining subsistence production (Ehui *et al.* 2002; Reid, 2007) and increasing demands for cash to cover rising expenditure. The predicted doubling of consumption of livestock products by the year 2020 (Delgado *et al.* 1999), means that the market is more than able to absorb an increasing supply of livestock without any negative effects on price. However, as the market for livestock has grown, the benefits to producers have been moderated by highly segmented markets and poor market information systems, due

[56] See for example, Morawczynski and Miscione (2008) for a review of M-Pesa use in Kenya. M-Pesa does not currently represent a significant tool for the majority of Orma pastoralists in the study area, due to lack of mobile phone signal.

largely to inadequate transportation and communication infrastructures. The segmentation of district, national and regional markets in Kenya means that terms of trade track local climatic events and supply, rather than being equalised or mitigated to some degree by regional supply (Swallow, 1994; Webb *et al.* 1992; Fafchamps *et al.* 1998). This means that market intermediaries who seek to integrate markets for their own benefit are commonly able to pay less than half of the terminal market price when they purchase livestock from pastoralists in local markets (Aklilu, 2002). Improving market access through investment in infrastructure and providing pastoralists with accurate and timely market information represents a promising avenue through which to redress the current inequality with which various actors interact with the market. The lack of untapped marketable supply in pastoral herds (McPeak *et al.* 2006) suggests that enhancing income through marketing of livestock should focus on improved market integration and reducing localised price crashes (Little *et al.* 2007).

Pastoralist areas have the least developed transport and communication infrastructures of any region in Kenya or more widely in sub-saharan Africa (Carr-Hill & Peart, 2005). This means that provision and access to services is usually well below the national average. Road transport not only provides the major link between district, national and regional livestock markets but also facilitates access to markets for local producers. Figure 4.5 illustrates access to the major livestock markets in Kenya.



Source: Oxfam, 2009

Figure 4.5 Access to livestock markets in Kenya

The benefits of improvements in transport and communication infrastructure to small-scale producers has been demonstrated by the positive impacts of public investment in India, Bangladesh and China (Mortimore *et al.* 2009; Ninno *et al.* 2007). Fan and Zhang (2004) demonstrated that development of infrastructure and telephone networks in China played an important role in boosting agricultural productivity for small-scale rural producers. Flood-proof transport infrastructure is particularly important for pastoralist areas where roads are regularly flooded, cutting off access to markets at critical times of the year (Oxfam, 2008). Figure 4.5 is regarded here as misrepresenting access to livestock markets for pastoralists due to the lack of distinction between 'theoretical' and 'practical' access discussed above. While the map is useful for understanding how the road network constrains access to

markets by vehicle, it fails to take into account the availability and affordability of transportation. None of the 144 respondents interviewed used the road transport network to take their cattle to market. The majority marketed their livestock in Mutha (Kitui District), which is a 5 day walk from Tiltila. Although there is one truck per week passing through the area (the only form of transportation) towards Mutha, this is routinely full of people and smallstock going to Hola or Garissa, such that the price for transporting cattle is prohibitively high. Proximity to a road is therefore a poor approximation of access to transportation. Other constraints to effective market access are lack of communication infrastructure. There is no mobile phone coverage in large parts of Tana River and in the entirety of the research site[57]. Problems of low and variable producer prices for livestock rank among the most widespread and serious concerns of pastoralists in Kenya (Gamba, 2005). The lack of telephone network allows traders to take advantage of pastoralists' lack of awareness of current market prices to appropriate a larger share of the profits than would be possible in the case of perfect information. A local politician has been lobbying the two main national network providers to erect masts in Galole Division, although community opinion is somewhat divided on the benefits. Some of the older and more influential respondents believed that mobile phone coverage may increase insecurity in the area, as bandits would be able to coordinate abushes on herds being taken to market and vehicles on the roads (a UN supply vehicle was hijacked in the neighbouring district during the fieldwork).

4.8 Provision of Food Aid

As well as 144 interviews with respondents concerning food aid and mobility, the information in this section is supplemented by key informant interviews with both World Food Programme (WFP) staff at the Garissa Field Office (with coordinating responsibility for Garissa and Tana River Districts) and the Kenya Red Cross (KRC) Relief Coordinator with responsibility for food aid distribution in both districts.

[57] Notwithstanding a particularly tall tree in Kalalani which through the use of a winch system can elevate cellular phones to a sufficient height to receive and send text messages (in favourable weather conditions).

Information was also provided by current and ex-food monitors, both for Catholic Relief Services (CRS), KRC and WFP. Local relief committee members were also consulted in order to gain insight into the process of targeting beneficiaries, distributing food, keeping records and passing feedback up the distribution hierarchy.

The United Nations *Long Rains Assessment 2010* released by the Kenya Food Security Steering Group (KFSSG) recommended that the total number of food aid beneficiaries should be reduced from 1.6 million to 1.2 million as a consequence of good rains received (UN, 2010). However, by mid-January 2011, the number of total beneficiaries had returned to 1.6 million with the Special Programmes Minister informing parliament that the number of food insecure households was expected to rise sharply over the following months (Daily Nation, 2011). This cycle of food aid assessment and provision based on rainfall and well-being assessments has been on-going in Tana River District since 1984.

The prevailing belief in development circles is that because food aid is 'so prevalent and entrenched' in the drylands (ODI, 2009), it contributes to an increasing reliance on external support among pastoralist communities (McCabe, 1990; Oba, 1992; Oxfam, 2008; ALive, 2006; Huysentruyt, 2002). Food aid provision can also have a negative effect on the supply of labour and market price of commodities provided as food aid (Coles, 1989). It can also lead to increasing concentrations of people and livestock around distribution points causing environmental degradation (McPeak, 2002; 2003). The notion that humanitarian food aid can have negative long-term effects on recipients' lives was first put forward by a handful of studies in the late seventies and early eighties (*cf.* Isenman & Singer, 1977; Lappé & Collins, 1977). A report commissioned by the European Union in 1995 (Clay *et al.* 1996), offered a thorough and quite condemning assessment of the effect of food aid on the food security of poor households. The report cited widespread evidence of serious *leakage*[58] of programme resources to unintended recipients. Excessive and poorly

[58] 'Leakage' is defined by the WFP as the proportion of the beneficiary population that does not belong to the intended target group.

targeted food aid is often the only sustained response to the cycle of drought which are an integral part of life in the drylands.

The persistent distribution of food aid to pastoralist communities over many years is a consequence of the conceptualisation of droughts as a series of emergency events. In institutional settings, this process is defined as an almost continual state of emergency (categorised by fluctuating levels of intensity). The occurrence of droughts (albeit with increasing frequency) in the drylands is routine and the process which can lead pastoralists progressively towards destitution occurs for a multitude of reasons, many of which are only partially determined by the occurrence of droughts and other climatic events. The political basis of food-insecurity in the drylands is often obscured by a focus on interventions addressing environmental-based humanitarian crises. The structural factors which undermine pastoralism are sidelined, while large amounts of resources are invested in 'development relief' which under the most optimistic review, only serves to maintain the *status quo* (Clay *et al.* 1996; Barrett & Maxwell, 2005). During the year 2000/01 the Kenyan Government spent 61.5 million US dollars on food aid while the WFP spent in the region of 100 million US dollars (WFP, 2011). The Pastoralist Thematic Group[59] (Livingstone, 2005) suggests that these figures represent 'the cost of doing nothing' to address the long-term structural development challenges in the drylands.

The role of food aid for 'emergency relief' in situations where wide-scale loss of life is imminent is far less controversial than so called 'development relief' which is intended to protect assets and assist in building resilience to future shocks (WFP, 2005). The distinction between these two forms of food aid is often blurred and complicates a discussion on the role of food aid more generally. The progressive loss of livestock caused by recurrent droughts (Reid *et al.* 2007), pushes people towards critical poverty thresholds, which define a household's ability to maintain a viable

[59] The Pastoralist Thematic Group, bringing together NGOs, CSOs and donor-funded projects active in the drylands, has been very significant. This group is one of several established to provide input to Kenya's Poverty Reduction Strategy Papers in different thematic areas.

production system. When food aid takes the form of a safety net preventing asset divestiture, it can be an effective tool for support of the most vulnerable in society. However, as will be described in the following sections, the effectiveness of food aid as a tool for asset protection hinges on well-targeted and timely provision.

4.8.1 Changes in Provision Modalities

School Feeding

School feeding programmes and maternal health feeding are well-established as practical ways to deliver food aid to specific groups within the wider community. School feeding has proved an effective incentive for parents to enrol and keep children (especially girls) in school in certain circumstances (Ahmed & Ninno, 2001). Following the most recent short rains assessment, 972,000 primary school children in Kenya are receiving school meals (252,000 as part of the expanded drought programme) (www.wfp.org). The role of school feeding and education provision in respondents' livelihood strategies is analysed in greater detail in the subsequent two chapters.

Community Based Distribution and Targeting

Targeting practises employed by the WFP have changed over time. Since 2002, community-based distribution and targeting (CBDT) has been employed in WFP operations in Kenya (Field Exchange, 2003). CBDT requires the creation of relief committees in each village. Relief committees are elected by the community and should have a female chairperson, literate secretary, and ideally be made up of three women and two men. All members are volunteers and it is their responsibility to decide which families should receive food aid based on training they receive from WFP. The introduction of CBDT aimed to unify what had been parallel systems of Government, WFP and NGO food aid targeting and distribution in Kenya. In tandem with a shift to community-based targeting approaches, there have been significant changes in the management of food aid supply chains. The development of strategic food reserves (held at extended delivery points (EDPs)) has helped to reduce time-

lags which in combination with improved early warning and assessment practises has enhanced targeting at the provincial and district level (Barrett & Maxwell, 2005). While improvements have been made, high quality and timely information is compromised by a lack of investment in technical support to distribution logistics, which in 2001 accounted for only 1 USD from every 1000 USD spent on food aid commodities and transportation (Marchione, 2002).

Food For Assets

Food for assets (FFA) (otherwise known as 'food for work') refers to the provision of food aid subject to the recipient family providing at least one member to participate in local development projects such as building or maintaining physical assets like roads, irrigation systems, schools and clinics, or engaging in soil and water conservation activities and reforestation (www.wfp.org). FFA projects represent a clear attempt to link the emergency and development forms of food aid discussed above. While FFA does improve targeting of food aid at families without any other consumption options (Lentz & Barrett, 2005), it is highly restrictive for mobile households who cannot participate in FFA while continuing to herd their livestock on the best grazing areas. In the form of 'development relief', FFA presents 'threshold' families with a difficult choice, whether to endure an asset smoothing strategy, thus missing out on food aid, or a consumption smoothing strategy by engaging with FFA. The weakness of FFA as a form of 'development relief', in the context of a mobile production system, is that for certain households, FFA may require them to compromise their long-term food security to ensure access to food aid in the short-term.

Other potentially negative aspects of FFA projects are that maintenance and construction of physical assets are often not well planned or useful to mobile households, such that in many cases project leaders are simply 'making work' for participants in order to satisfy WFP's FFA objectives (Rami, 2002). The limit to the utility of unskilled work in creating physical assets in remote areas, and the exclusion of women in many activities, presents a significant challenge to realising potential

benefits from FFA programmes. FFA was introduced to Galole division in mid-2008 (at the time of the research) and 10 percent of total food aid to the division was reserved for FFA participants. In Tiltila, the FFA project involved clearing heavy bush for ten metres on both sides of an unmade road in preparation for a new road. At the time of writing (early 2011) the planned road has not arrived and the cleared bush has largely regrown.

Food Aid and Nutrition

In terms of nutrition related ill-health, micronutrient deficiencies (e.g. vitamins A or D, iron, iodine) are typically more significant than protein-energy malnutrition (Barrett, 2002). Despite nutritionists' concerns, food aid continues to be of very low nutritional variety. Donor subsidies to domestic agricultural sectors (EU 54.4 billion USD per annum (EU, 2010), United States 23 billion USD per annum (Washington Post, 2005)) and the resulting surpluses of exportable cereals have formed the basis of food aid commodities for decades. More recently there have been efforts to source more food aid from target countries and fortified 'blended food products' have featured in direct feeding programmes over the past twenty five years (Barrett, 2002; Marchione, 2002). Due to the comparatively high cost of blended foods, their distribution (compared with foreign and domestically grown cereals) has been very limited. There has been a number of studies on the health effects of shifting to a carbohydrate heavy diet from a high protein milk-based diet, common among pastoralists. Generally the shift has led to increased ill-health although the results are somewhat compromised due to the confounding effects of the correlation between a carbohydrate heavy diet and settlement which in turn is strongly correlated with communicable disease prevalence as discussed above (Nathan *et al.* 1996). The quote below represents a typical view expressed by respondents.

> *"The food that we buy from shops is not good for us. The best food is milk"*
>
> Respondent 137 (low wealth)

4.8.2 Food Aid Distribution in Tana River District

The lead agency for distribution of WFP food aid in Tana River District was changed from CRS to KRC in May 2007. The national food aid coordination body is the Kenyan Food Security Steering Group (KFSSG) which is chaired by the Minister for Northern Kenya and Other Arid Lands. Various government ministries, the Office of the President, WFP, UNICEF, ARLMP, international donors and NGOs are all permanent members of the KFSSG. Biannual assessments of the two wet seasons are coordinated by the KFSSG in order to assess the need for adjustment in beneficiary numbers across the country. District Steering Groups (DSG)[60] made up of the district heads of line ministries, NGO and CSOs, the lead distribution agency, ARLMP, and chaired by the District Commissioner, coordinate all food aid activities at the district level. DSGs select the lead agency for food aid distribution as well as conducting biannual food security assessments and overseeing the distribution of food aid each month.

All food aid commodities distributed in Tana River District come from Mombassa (including EU imports), Eldoret, Kitale, or Nairobi, and are delivered to the district EDP in Hola where they are stored until distribution. A certain level of strategic reserves are also maintained at Hola EDP. There are 50 final distribution points (FDPs)[61] in Tana River District, 16 in Galole Division and 5 in Waldena Location (comprising Tiltila and Waldena Sub-locations). Tiltila, Waldena and Kalalani make up 1093, 757 and 493 beneficiaries respectively (this includes the surrounding villages). The total number of beneficiaries in Waldena Location at the time of the study was 2,798 (personal communication, KRC coordinator). As outlined in Chapter Three, of the three principle settlements in the study area (Tiltila, Waldena and Kalalani), Kalalani is actually in Kitui District although it was widely believed to be in Tana River District by respondents. The district boundary is controversial as it is

[60] DSGs operate in tandem with District Social Dimensions of Development Committees, the details of which will not be explained here.

[61] FDPs are where the lead agency hands food over to the relief committees for collection by households from the surrounding area.

believed that Ormaland is now synonymous with Tana River District. As such, if Kalalani is adjudged to be outside the District then this has implications for their continued use of the land. Considering the official designation of Kalalani, it is surprising that it is officially one of Galole Division's FDPs and that Kalalani Primary School was opened by the District Commissioner of Tana River. It is likely that due to the resource competition and resulting ethnic tension in the area, that local government and KFSSG are adhering to ethnic boundaries rather than cartographic ones in order to avoid a return to conflict.

The district is currently provisioned at 75 percent on the WFP ration scale which results in each beneficiary being allocated 10.35 kg cereals, 1.8 kg pulses[62], 0.6 kg vegetable oil, 1.2 kg blend (fortified porridge), and a small amount of salt each month. Relief committees keep a register of beneficiaries and once the KRC vehicle arrives and unloads the monthly ration at the FDP, the relief secretary signs the waybill to acknowledge receipt of the correct amount and quality of food. The relief committee then set about dividing up the food into amounts for the surrounding villages as beneficiaries arrive to collect their allocation. A member of each recipient family is required to sign the register to acknowledge that they have received the correct amount (often a thumb print is sufficient). If the family is in another area with their herds, it is possible for another family member (usually an elderly relative or school child) to sign for their quota. There is one KRC food monitor for each of the four divisions currently receiving food aid (Bangale, Madogo, Bura and Galole). The KRC food monitors move in two vehicles during the 10 monthly distribution days, visiting FDPs and listening to feedback from communities. Likewise, WFP has its own food monitors who undertake to visit at least five FDPs per month. There is also a limited amount of post distribution monitoring (PDM) which is undertaken by KRC food monitors. This is meant to ensure that certain households are not left without their full allocation at the end of distribution day.

[62] The official 75 percent pulses ration is 1 kg but both respondents and officials quoted the higher figure of 1.8 kg.

4.8.3 Food Aid Redistribution

Despite the care taken to calibrate per person monthly amounts (based on district wide assessments of rainfall and food security), and the CBTD training of relief committees (to ensure only the most food insecure households receive food aid), there was widespread 'redistribution' occurring at all FDPs in the study area. 'Redistribution' refers to the practise of completing all the paperwork as per the requirements of the KRC and WFP but subsequently redistributing the food aid in line with the community consensus and local customs. Both KRC staff and WFP staff in the Garissa Field Office were aware to some degree of redistribution practises undertaken by Orma communities. Despite the considerable resources invested in targeting specific households and training relief committees, there seemed to be no effort on the part of WFP or KRC to understand the basis for targeting errors associated with CBTD. Notwithstanding this study, there is an almost complete lack of information on the extent, effects, or patterns of food aid redistribution in Orma communities. Other studies have reported the existence of food aid redistribution practises in other pastoralist contexts (Bush, 1995; Hendrikson *et al.* 1998; Mathys, 2004; Lentz & Barrett, 2005; Merten & Haller, 2009) although there is very little empirical data available. It is suggested here that the lack of research on food aid leakage, despite the emphasis placed on the importance of well-targeted food aid, may be due in part to the problematic nature of the enquiry. Circumventing WFP targeting may require some minor deception or conspiracy on the part of recipients which may lead to misrepresentation of the process of food aid allocation to the professional observer. Due to the length of engagement with Orma pastoralists as part of this study, sufficient rapport was built up such that respondents were willing to discuss redistribution openly and no concern was expressed at the prospect of the author highlighting the practise to a wider audience. Consequently, the data on food aid redistribution presented in this chapter is regarded as wholly reliable.

The data presented in table 4.10 shows that of the 87.8 percent (101/115) of respondents who receive food aid, 31.7 percent (32/101) of them were doing so

unofficially through community redistribution. The average period for which respondents have been receiving food aid is 6.7 years.

Table 4.10 The Relationship Between Number of Children, Household Wealth and the Amount Relief Food Received

	N	Unofficially Receiving	Total No. Receiving	Per Child Average (Kg)	Total Relief (Kg)	Total Eligible Children	% Eligible Receiving
High Wealth	25	14	18	5.3	678	179	72.1
Medium Wealth	40	13	35	8.6	1736	210	96.2
Low Wealth	50	5	48	10.3	2387	234	99.1
Overall	115	32	101	8.5	4801	623	90.4

The food aid quantities in table 4.10 refer to cereals only although the other ration components are also received in roughly the correct ratios. They are not mentioned in table 4.10 nor in figures 4.6, 4.7 & 4.8 below for simplicity. This reflects the manner in which respondents refer to food aid allocation, whereby 10 kg is shorthand for 10.35 kg cereals, 1.8 kg pulses and 0.6 kg vegetable oil, as per the WFP ration.

All of the relief food committee members interviewed, emphasised that they apportioned food aid based primarily on the number of children in the household (except for *"very abled"* ('high wealth') households). This deviates from official WFP policy, whereby food aid rations are targeted based on the level of household food insecurity. In contrast to community allocation criteria, WFP policy does not exclusively target children. The data on relief food presented in this chapter, reflects the definition of 'eligible recipients' used by relief committees. 'Eligible' children (see table 4.10) therefore refers to primary school age children and below (living in the household). A second criteria used for allocation of food aid by relief committees is family wealth which (in a pastoralist context) is almost always represented by

livestock wealth (Swift 1987). Despite WFP training on CBTD, relief committees engaged in extensive redistribution of food aid based on the principle that almost all families should receive some food aid, regardless of wealth.

The quote below from a respondent in Waldena illustrates the rationale expressed by many respondents from low wealth households concerning their support for the allocation practises of the relief committee and the wider community.

> *"Of those who are around here, there is not a single man who is having milk from a single cow. So even the man who has heads or me who has only 10 goats, at this moment of dry season we are the same"*
>
> Respondent 77 (low wealth)

So ingrained is the belief that selling livestock should be considered a last resort (due to the multiple threshold effects discussed above), that the poor collude in reducing their supply of food resources at the most food insecure time of the year. The degree of collusion as opposed to coercion by powerful wealthy members of the community is an open question, although based on the attitude of respondents, there is certainly a significant level of collusion involved, both by relief committees and low wealth families. It is hypothesised here that the motivation of low wealth families to collude in this way, may be to maintain traditional social insurance institutions in tandem with externally provided support (Bush, 1995). If the poor are seen to be sharing with the rich, there is more incentive for the rich to assist the poor during periods when relief food fails (e.g. by providing milk, employment and lending donkeys in the wet season).

The effects of this redistribution can be observed in data presented in table 4.10. The considerable amount of families receiving food aid unofficially and the percentages of eligible children receiving food aid across wealth categories clearly demonstrates the existence of widespread redistribution and consequent food aid 'leakage'. While the data in table 4.10 gives an accurate overall impression of food aid allocation, the use of averages masks considerable variance in the amount of food aid received per

family. Figures 4.6, 4.7 & 4.8 illustrate the variance of the data and describe the relationship between family food aid allocation and number of eligible children for the different family wealth categories. By disaggregating the data for different wealth categories, the specificities of allocation patterns according to family wealth can be examined. In figures 4.6, 4.7 & 4.8 the bold line represents the 'line of best fit', while the faint dashed line represents the WFP prescribed 'ideal' ratio of 10 kg of cereals per beneficiary, for comparative purposes.

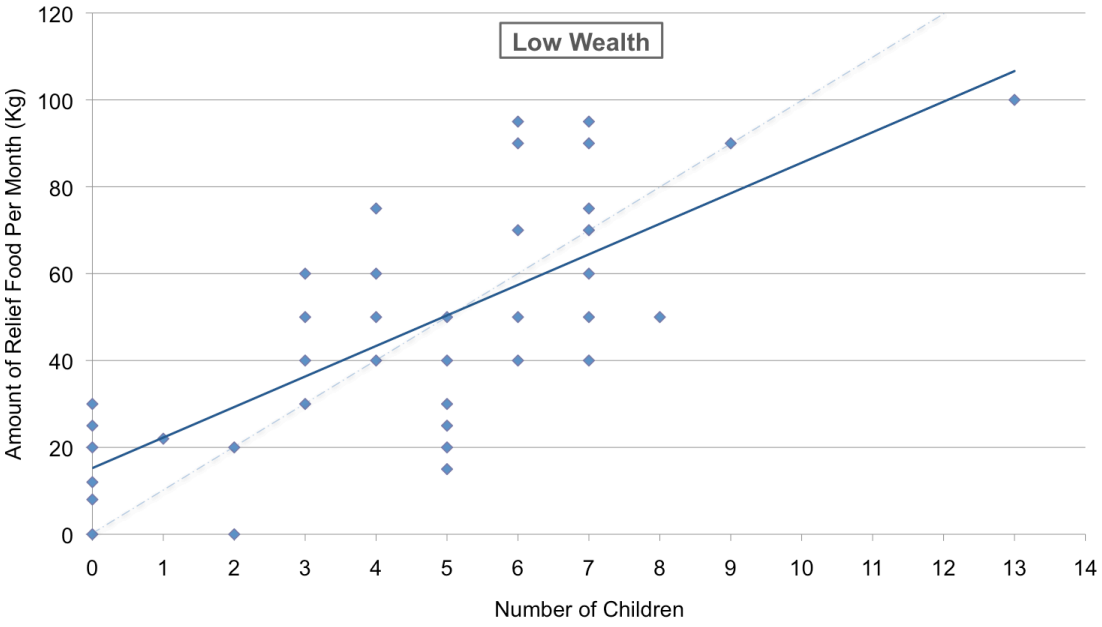


Figure 4.6 The Relationship Between Number of Children Per Family and Amount of Relief Food Received Per Month for Low Wealth Families [*r* value 0.7375]

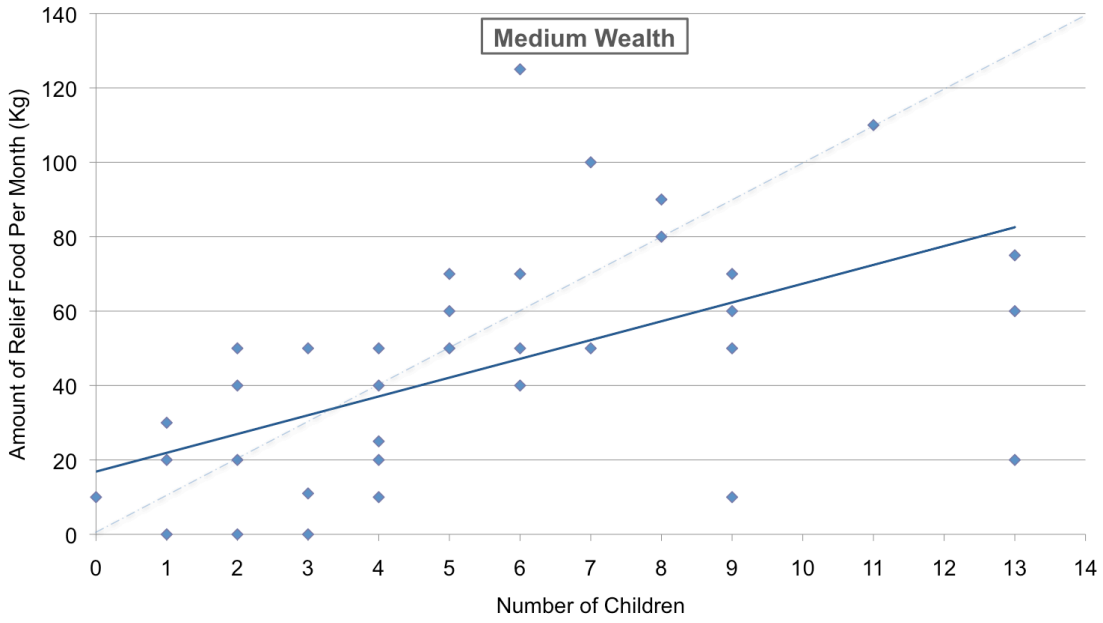


Figure 4.7 The Relationship Between Number of Children Per Family and Amount of Relief Food Received Per Month for Medium Wealth Families [*r* value 0.5633]

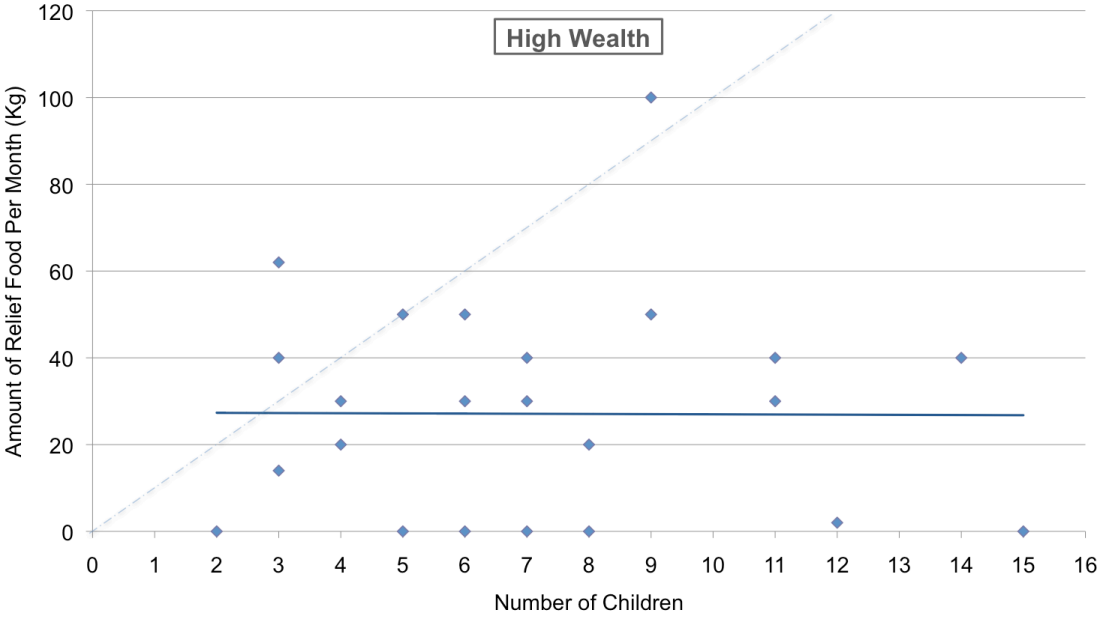


Figure 4.8 The Relationship Between Number of Children Per Family and Amount of Relief Food Received Per Month for High Wealth Families [*r* value -0.0061]

The graphs for low and medium wealth families (figures 4.6 and 4.7), both show a positive linear correlation between the number of eligible children and amount of relief food received per household. In order to measure the strength of the correlation, Pearson's correlation coefficient (PCC)[63] was used. PCC (typically denoted by '*r*') gives a measure of how far away all the data points are from the line of best fit and thus how well the data fits the line (linear dependence).

For families in the low wealth category, the relationship between number of eligible children and the amount of food aid received, has an *r* value of 0.7375 and the line of best fit closely resembles the 'ideal' WFP ratio line. This indicates that despite the considerable deviation of data points from the line of best fit, the correlation between food aid allocation and number of eligible children is strong for low wealth families. The angle of the line of best fit and the y-axis intersect point indicates that family food aid allocation reflects a roughly equal incremental increase for each additional child. This can be contrasted with the angle of the line of best fit for medium wealth families (figure 4.7), which indicates that each additional child in a household receives a diminishing food aid allocation. The strength of correlation is also weaker for medium wealth families with an *r* value of 0.5633 (nonetheless regarded as a strong correlation).

Figure 4.8 illustrates that for families in the high wealth category there is no correlation ($r = -0.0061$) between food aid allocation and number of eligible children. The data appears to describe a 'token' food aid allocation for all but the very wealthiest families. This fits with respondent testimony on allocation patterns (see quote above) and the fact that 77.8 percent of high wealth families receiving food aid are doing so unofficially. The remainder are on the official beneficiary list (breaching CBTD guidelines). The average allocation for high wealth families receiving food

[63] Properly referred to as the Pearson product-moment correlation coefficient, it is widely used as a measure of the strength of linear dependence between two variables. The correlation coefficient can range from +1 to -1 depending on the type and strength of correlation. Variables with a correlation coefficient from +0.5 to +1 and -0.5 to -1 are generally considered to be strongly correlated depending on the nature of the variables.

aid is 37.7 kg regardless of the number of eligible children. Respondents and relief committees clearly undertake to distribute food aid more widely than prescribed by the WFP but still in a coherent way. Food aid allocation and percentage of eligible children receiving food aid is highest for low wealth households (see table 4.10). Targeting is more effective and allocation more consistent for low wealth households, as indicated by the strength of the correlation between food aid and eligible children, and the angle of the line of best fit (see figure 4.6). Children of medium wealth households are less likely to receive food aid, have a smaller allocation (see table 4.10) and are less 'well targeted' (see figure 4.7), while high wealth household receive a 'token' allocation.

Despite the extensive redistribution and leakage to non-intended beneficiaries, relief committees and the wider community are still employing coherent targeting of food aid. The main area of concern is the potentially negative effects of food aid leakage, and the variation in per child food aid allocation (particularly for low wealth households). This may be partially explained by wealth variation within the three wealth categories, although it is also likely that social capital and power dynamics play a role in the allocation of food aid by relief committees. Another area of concern highlighted by respondents, is non-provision of food aid by KRC during certain months of the year.

The majority of respondents reported that the 'hungriest' part of the year was often when the long rains arrive but before the grass has grown and animals have milk, because this is the most common time for food aid provision to fail. It was explained that river flooding preceding the arrival of the rains can make roads impassable and food aid frequently fails to get through for one or two months. This problem was not acknowledged by WFP staff although the sheer number of respondents who independently verified this seasonal pattern of food aid failure suggests that road flooding does indeed compromise food aid provision for one or two months in wet years. Provision failure at the hungriest time of the year has the potential to seriously

compromise the asset protection role of 'development relief', particularly in the absence of financial services. 'Timeliness of provision', along with effective targeting is regarded as one of the most important elements of effective food aid (Barrett & Maxwell, 2005). Conversely, in the context of long-term 'development relief', some authors (Little, 2008) have suggested that uncertainty around the timing and amount of food aid can serve to discourage over-reliance by recipients. Issues of recipient dependence will be explored further in the next section.

4.8.4 The Effects of Targeting Errors and the Role of Food Aid

A common theme in detailed reviews of food aid (*cf.* Clay *et al.* 1996; Barrett & Maxwell, 2005) is an emphasis on the importance of effective targeting of beneficiaries in reducing the potentially negative impacts of food aid. In this study, targeting at the beneficiary and household level has been shown to be compromised by the widespread practise of redistribution. The literature points to two main negative outcomes of poorly targeted food aid. The first is labour market disincentives, the second is food market price effects. Empirical evidence demonstrates that labour supply becomes more responsive to changes in income as people grow wealthier (Barrett & Maxwell, 2005). This suggests that the inherent labour market disincentive effects of food aid would be exacerbated by targeting errors (inclusion of unintended beneficiaries) by increasing disincentives to work for those individuals who turn food aid into leisure (rather than increased food consumption). The extent and pattern of food aid redistribution described above, suggests that disincentives to work may exist for certain 'threshold' families for whom food aid is useful but not vital to household food security. This issue is highly sensitive, although several respondents willing to talk openly on the subject, suggested that the provision of food aid can demotivate certain households from remobilising if they have borderline viable herds. Other respondents suggested that food aid 'makes people lazy', but when it was proposed that food aid is detrimental for their community, they were quick to point out its importance for certain households. The quotes below typify views expressed on the negative aspects of food aid.

"*People don't work because they know they will get relief food […]. It is a bad thing for our community. It is necessary for some who are not able to earn an income or have no animals..*"

Respondent 27 (high wealth)

"*I don't understand why people keep their sheep and goats around Tiltila when the dry season is coming, I think it is because they know that relief food is coming*"

Respondent 2 (medium wealth)

After one high profile respondent hinted to me that food aid can demotivate people from working hard, I asked him 'So is relief food a bad thing for the community?

"I am a politician, I can't say that relief can be bad as some people might lose their life"

Respondent 50 (medium wealth)

The effect of targeting errors (or 'leakage') on the market price of food depends on the extent of food aid provision and the remoteness of the area. In the context of permanent provision of food aid and very poor transportation links to larger markets, food aid can depress demand and prices for commodities in local shops. Non-intended food aid beneficiaries partially substitute food aid for purchased food which reduces the demand, and therefore the price of locally traded and produced food. In the Orma case, this mostly affects local Orma shopkeepers (and Pokomo farmers to a lesser extent) who generally represent the wealthiest section of society. As described in section 4.7.2, because of their provision of credit, shopkeepers are still able to do a good trade in basic food stuffs and luxury goods such as tobacco and sugar, particularly in the dry seasons and when food aid delivery is not possible due to flooding at the start of the wet season.

'Aid dependency' is believed to be a widespread effect of long-term food aid provision. As discussed briefly above, it is a common assertion in development literature concerning food aid, that long-term provision results in dependence on the part of recipient households (Hendrikson *et al.* 1998; ALive, 2006; ODI, 2009;

McCabe, 1990; Oba, 1992; Oxfam, 2008; Huysentruyt, 2002). In Barrett & Maxwell's (2005) thorough and pragmatic review of food aid provision, the authors seek to question the factual basis for the widespread belief in the existence of 'aid dependency'. Based on an extensive review of literature, Barrett and Maxwell reveal that much of the evidence for dependency is anecdotal, and that while poor targeting of food aid creates incentives that distort behaviour, this does not necessarily breed dependency. They suggest that household food aid allocations are generally a small proportion of total food consumption, which is cited as evidence against aid dependency in all but the 'most severe cases of acute humanitarian crises' (Barrett & Maxwell, 2005).

The understanding of food aid dependency outlined here diverges from that of Barrett & Maxwell (2005), not by offering support for the existence of food aid dependency, but by suggesting that the existence of what is termed here 'absolute dependency' is largely irrelevant and that a focus on what Barrett & Maxwell describe as 'incentives that distort behaviour' is of more practical relevance to understanding the holistic effects of long-term provision of food-aid to pastoralists. By focusing on the literal meaning of *dependency*[64] Barrett & Maxwell rightly conclude that it is a very rare phenomenon. However, a rejection of the notion that food aid can result in over-reliance on external support is not appropriate on the basis that such reliance does not constitute 'absolute dependency'. Ignoring the significance of 'degrees of dependency' (as opposed to absolute dependency) can mask the significance of behavioural changes which compromise, to some degree, a return to self-reliance on the part of long-term food aid recipients.

Effects on households around the 'poverty threshold' are of key concern in assessing the efficacy of food aid in supporting pastoralist communities. Contrary to Barrett & Maxwell's (2005) claim that food aid generally forms a small part of total food

[64] *Dependency* or as is termed here 'absolute dependency' literally means that when the support is removed, the recipient can no longer satisfy their consumption requirements nor maintain their general well-being in the short-term.

consumption, table 4.10 shows that average per child cereals allocation is 10.3 Kg per month for low wealth households. In combination with WFP school and maternal health feeding programmes this can constitute a very significant component of total monthly household consumption. For these households, the key question is whether they would be taking greater steps towards re-establishing a herd adequate for subsistence in the absence of food aid.

> "*I get 110 kg of relief food […], because I get relief food I don't have to sell animals unless I need to buy cloth or tea or sugar. Sometimes I can just sell calves. I can't move far or I will not be able to get relief food every month..*"
>
> Respondent 55 (medium wealth)

Understanding the process of herd re-establishment for low and medium wealth households is therefore an important step in answering this question. If household mobility is compromised by food aid provision (and other public services), this forms a key element in understanding the role of services in pastoral livelihoods. If herd re-establishment in the absence of food aid relies on mobility and assistance from kin and clan that is to some degree displaced by receipt of food aid, then food aid can be regarded as an inefficient use of resources and potentially damaging to traditional social insurance institutions. As discussed above however, food aid redistribution to wealthy households may serve to protect such institutions as a response to the uncertainty around food aid provision and its failure during key food insecure times of the year (Hendrikson *et al.* 1998).

Some authors have offered empirical evidence in support of the substitution effect of food aid on traditional social insurance institutions (Dercon & Krishnan, 2003), while others (Abdulai *et al.* 2005; Lentz & Barrett, 2005) have presented empirical research on inter-household transfers which shows that provision of food aid does not significantly reduce the amount of transfers between pastoralist households. Based on the testimony of respondents in the current study, there has been a

significant decline in the scope of traditional social insurance mechanisms in Orma society.

> *"We had lots of milk before the days of drought- in those days people were willing to help one another. In the wet season, when they are moving- when they settle, a rich family automatically loans you 3 or 4 heads for milking. During those days a big number is having animals- nowadays they don't have"*
>
> Respondent 1 (low wealth)

What is less clear is the cause of the decline and whether it signifies a permanent contraction of institutions for social insurance. Apportioning causality for the decline of traditional institutions among diverse processes of social change (such as increasing social differentiation) is highly problematic. A more detailed study on such dynamics is required in order to make any firm conclusions regarding the role of relief food for different sections of pastoralist communities. One component of such an analysis is the characterisation of 'threshold families' in different contexts and the factors involved in livelihood strategy decision-making. The current study contributes to such an analysis for Orma pastoralists.

4.9 Conclusion

This chapter has set out to develop a structured examination of the constraints to Orma livelihoods as perceived by respondents themselves. The data presented on Orma mobility and public service access contributes valuable knowledge on the dynamics of Orma livelihoods in the context of an acute dearth of reliable data (Oxfam, 2009). While Kelly (1992) and Ensminger's (1992) studies are extremely informative, they represent the only substantial sources of information on Orma livelihoods. Other data on access and use of public and private services by Orma pastoralists is very limited and often unreliable due to data collection methods. By effectively raising critical poverty and subsistence thresholds, poor quality and inappropriate services and infrastructures undermine the pastoral production system and restrict mobility, which represents a significant constraint to the accumulation of assets by low wealth families. Settled respondents had experienced a 73.9 percent

higher rate of under five child mortality (153.4) than mobile respondents (88.2) despite their proximity to health services in settlements. This leads inevitably to the conclusion that access and/or quality of services is unacceptably low in the research area.

Inadequate infrastructures contribute to the highly segmented nature of livestock markets which allows intermediaries to earn large economic rents at the expense of pastoralists. Addressing these constraints will allow pastoralists to benefit fully from the expected escalation in demand for livestock products (Delgado, 1999; Emyr *et al.* 2004; World Bank, 2005). The important role of informal credit to low and medium wealth families suggests a role for government in underwriting the 'risk barriers' faced by formal financial institutions in extending credit to pastoralist families without traditional collateral (permanent buildings, titled land etc). The 2006 Microfinance Act (CBoK, 2011) sought to encourage the penetration of micro-finance institutions into the drylands by providing greater regulation and support, although thus far little progress has been made.

Despite the conclusion of the WFP's 2005 evaluation report on food aid targeting, that "research is urgently needed to better inform a number of key elements of current targeting practise", there remains very little detailed information on community allocation of food aid. Considering that food aid represents the principle channel for external investment of resources to support pastoralists in the drylands, there is startlingly little empirical evidence on who benefits from these resources and what effects they have on pastoral livelihoods. The lack of empirical data is particularly stark in contrast with the firm consensus on the importance of targeting in the literature. For example, Lentz and Barrett (2008 p.1161) typify the position: "the quality of targeting of food insecure households is the single most important determinant of how effectively development assistance serves food insecure peoples". Data presented in this chapter goes some way to illuminating the patterns

of food aid allocation and the role food aid plays in supporting and constraining the livelihoods of different sections of Orma society.

The extensive redistribution of food aid undertaken by the community resulted in 31.7 percent[65] of respondents receiving food aid, doing so unofficially. 99.1 percent of children from low wealth families were receiving food aid compared with 72.1 percent for families in the highest wealth category. Average amounts of per child monthly maize ration were 10.3 kg and 5.3 kg respectively. Despite the extent of these 'targeting errors' (or *leakage*), figures 4.6, 4.7 and 4.8 clearly demonstrated a coherent pattern of food aid distribution based on family wealth and number of children. The data on food aid targeting presented here suggests that it is doubtful whether CBTD can be improved without compromising the critical asset protection role of food aid for families around the poverty threshold[66].

One of the major factors compromising the effectiveness of food aid in fulfilling an asset protection role was the failure of food aid at critical times of the year. Both respondents and relief committees reported that food aid was routinely unavailable during certain times of he year. While it was not possible to verify the annual pattern of food aid failure, the issue of road flooding after the long dry season was acknowledged to be a problem by the KRC coordinator. This warrants further attention due to the seasonal dimension to asset thresholds in pastoral livelihoods.

Another potential factor compromising the asset protection role of food aid is the planned transition from general food distribution (GFD) to food for assets (FFA) under Kenya's current WFP Emergency Operation. Currently, in Galole Division, 10

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[65] This figure translates into a 'targeting effectiveness' of 0.68. Targeting effectiveness is defined by the WFP as "the ratio of included target population to the total target population minus the ratio of the included non-target population to the total population included" (WFP, 2005).

[66] Wealth categories were calibrated according to a process of community-based wealth ranking, although based on standardised measures of poverty, low and medium wealth categories effectively represent very low and low wealth families respectively. As table 4.3 shows, the poverty threshold can therefore be hypothesised to exist somewhere in the medium wealth category. This implies that families around the poverty threshold could potentially be excluded from receipt of food aid under strict WFP targeting.

percent of GFD resources have been transferred to FFA although this is to be extended to all divisions receiving food aid in the District. KRC and WFP staff have also been instructed to assess the scope for expanding FFA as a proportion of general food distribution. This trend has the potential to jeopardise the 'development relief' (or 'cargo net' (Barrett, 2005)) element of food aid, which is critical to food aid's asset protection role. Expansion of FFA will result in a loss of labour to the production system and constraint of both household and herd mobility, as livestock keepers are compelled to engage in manual labour to secure access to food aid. While FFA projects have the advantage that they are self-targeting, the choice presented to families around the poverty threshold, is either exclusion from food aid or compromised livestock production (through both loss of labour and the constraint on mobility). This may lead to removal of children from school to make-up the labour shortfall and will effectively raise the poverty threshold for families potentially undermining their chance of rebuilding their herd.

The constraint of mobility as a by-product of changes in WFP targeting practises is highly undesirable for beneficiaries whose production system utilises mobility as the principal means of managing risk and maximising production. Restricting certain forms of pastoral mobility has been integrated into several WFP emergency operations objectives. One such objective common to operations in many east African countries is to "preserve productive assets and prevent distress migration by pastoralists" (WFP, 2005). In certain circumstances this can be regarded as both a dangerous and contradictory objective. While preventing migrations may be valid in certain circumstances, policies specifically aimed at constraining pastoral mobility can become misinterpreted and decontextualised as they pass down the implementation hierarchy. Problems associated with food aid provision, targeting and distribution, and the assessment of livelihood impacts, that have been identified in this chapter, offer some insight for improvement of these processes. The broader problem, however, is the conceptualisation of support for pastoral communities principally as a series of 'emergency responses' to crises. The comparative lack of

investment in alternative forms of livelihood support for pastoralists propagates the current cycle of drought, herd loss and food aid. With the important exception of food aid required by beneficiaries to survive in the short-term, long-term provision of food aid can be understood as the "price of doing nothing" (Livingstone, 2005 p.3) to address the underlying causes of pastoralist marginalisation and poverty.

The extraordinary growth in camel keeping described in this chapter represents a significant endogenous adaptation to climate change. Forty-one per cent (16/39) of high wealth, 16.3 per cent (7/43) of medium wealth and 1.7 per cent (1/58) of low wealth households now keep camels. This is despite the fact that in 1992 (p.34) Ensminger reported that "the Orma continue to be primarily cattle pastoralists, although they do keep a small number of sheep and goats; camels are totally absent". This adaptation of the production system is severely hampered by lack of knowledge on camel husbandry, diseases and treatment. As highlighted in section 3.3, the only source of knowledge is from Somali pastoralists, with whom the Orma have an uneasy relationship. Government support for Orma adaptations such as camel keeping, through training and support offers a low cost alternative to costly interventions imposed from above (Hodgson, 1999). Camel keeping among Orma pastoralists is currently not viable for the majority of low wealth households but it may reduce the level of risk faced by medium wealth 'threshold families', which as described throughout this chapter, is fundamental to the on-going success and sustainability of the mobile pastoral production system.

Another significant livelihood adaptation is the increasing use of household splitting in order to access the benefits of settlement without sacrificing the production of the herd. Household splitting is a strategy generally employed by the richest Orma pastoralists although increasingly medium wealth respondents are taking second wives (at great cost in terms of dowry and the need to purchase food for the settled household) in order to access static services like education and food aid. Polygamy has therefore come to represent more than a strategy to increase the supply of family

labour. It is seen as a way of gaining access to static services and networks which are becoming increasingly important as herd sizes decline. These trends may afford valuable insight to policymakers and planners seeking to provide more appropriate services to mobile pastoralists and are of particular relevance to the discussion of education provision in the following chapters.

Based on the importance of threshold dynamics in Orma livelihoods, the need for characterisation of 'threshold families' in a range of pastoral contexts is one of the central conclusions of this chapter. Understanding the role of negative feedback systems, which operate below the poverty threshold, is necessary in order to effectively focus interventions on minimising these feedback effects and making it easier to escape poverty traps (Barrett *et al.* 2007). Such dynamics are well understood by pastoralists themselves, who employ 'asset-smoothing' strategies which involve tolerating extended drops in consumption levels to avoid livestock sales. It is argued here that households around this threshold point can be effectively supported through interventions which reduce herd decline and support herd recovery (veterinary care and training, livestock price support (Swallow, 1994) and market information, and provision of services that do not compromise household mobility at the expense of livestock health and productivity).

Families that are still mobile but below the subsistence threshold may represent a key focus point for external support both because returns to investment are greatest and impacts are more sustainable. This is not to neglect the responsibility of social protection for lower wealth families. Rather this analysis provides a set of criteria for focusing specific types of support where they are needed most (and are of most value). In addition to the empirical data, this chapter has presented a contribution to theory in terms of pastoralist livelihood and wealth dynamics. It remains to be seen whether these new or adapted conceptual frameworks resonate with or assist with interpretation of system dynamics among other pastoralist groups in different contexts.

One the central conclusions of this chapter is the importance of household and herd mobility to successful pastoral production and the need for consideration of the 'mobility imperative' in the provision of services in pastoralist areas. The utilisation of larger geographical scales through pastoral mobility allows pastoralists to capitalise on environment variability to maximise production. In the context of predictions of increased climatic variability (IPCC, 2007), mobile pastoralism has an inherent capacity to adapt, and even benefit from the impacts of climate change.

Building on the analysis of service provision and infrastructures and the role of mobility, Chapter Five outlines the background on pastoralist education, while Chapter Six presents extensive data on Orma education and develops a framework to structure Orma livelihood strategies in light of the insights on critical asset thresholds discussed here.

Chapter Five- Education Provision to Pastoralist Communities in Kenya

5.0 Introduction

Children of nomadic and pastoralist households form a significant constituent of the broader UNESCO category of 'marginalised groups'. The poor state of education and other service provision to marginalised groups is threatening the attainment of the two Millennium Development Goals (MDGs) concerning education[67] by the year 2015, and the targets outlined in the World Declaration on Education For All (1990). This has led to a growing awareness of the urgent need to rethink strategies required to ensure that appropriate education and other public services are accessible to marginalised groups (Carr-Hill & Peart, 2005). Nomadic populations represent a particular challenge to achieving education for all (EFA) because of their low population densities, their mobility and the labour requirements of the pastoralist production system. In common with other marginalised groups, inability to cover expenses associated with formal education, and negative attitudes towards the education of girls, are also factors at odds with the achievement of national and international education targets. There is an absence of detailed, robust and comparable data on the education of pastoralist groups in sub-Saharan Africa. The

[67] Universal primary education (UPE) and eliminating gender disparities in primary and secondary schools at all levels by 2015 (UNDP.org, 2011).

inaccuracy of enrolment estimates is due in part to the aggregation of education statistics[68] at the national level in addition to the issues covered in Chapter Two (such as problems of defining a 'pastoralist', and exclusion from national surveys).

The disparity in estimates of school attendance by school-age pastoralist children is notably demonstrated by Oxfam (2005) which estimates[69] that either 12.5 to 20 million children, or 22.5 to 36 million children are not attending school (depending on which of their school-age population and attendance estimates are used). In the very next sentence, however, it is stated that,

"Between 15 million and 25 million of the estimated 100 million of out-of-school children are probably nomads and pastoralists" (Oxfam, 2005 p.1)

While this disparate set of estimates is somewhat baffling, they are at least in roughly the same range. The UNESCO Global Monitoring Report (2010) quotes Carr-Hill (2009) who estimates that up to 8.5 million children from nomadic households do not attend school globally. This figure dramatically undercuts Oxfam's estimates and clearly underlines the urgent need for disaggregated and reliable national education statistics with which to plan national pastoralist education strategies.

Based on the statistics that are available, it is clear that pastoralists in sub-Saharan Africa face extreme educational disadvantage, which is experienced disproportionately by girls (UNESCO, 2009). Both the availability and the quality of education can frequently represent the poorest within a system that is significantly underperforming overall (Sifuna, 2005). The International Institute for Educational Planning's (IIEP) study (Carr-Hill & Peart, 2005) on the education of nomadic peoples in East Africa, highlighted that for children from nomadic households, the rate of primary education enrolment as well as access to other basic social services is

[68] Aggregation of education data at district and national levels means that educational provision and performance data for specific groups are unavailable.

[69] These figures are derived from Oxfam's (2005) estimates that between ten and 50 per cent of the 25 million to 40 million school age children living in nomadic or pastoralist households, attend school.

consistently and significantly below the national average. Oxfam's (2009) draft *Report on the State of Pastoralism* (ROSP) confirmed that, based on available statistics, pastoral regions have relatively lower education attainment indicators. Poverty rates are also highest in nomadic pastoral areas, further diminishing the ability to access education when services are provided.

Data from the UNESCO's (2009) household survey and censuses (calculations by Hartigen & Klasen, 2009) reveal the scale of the disadvantage. Figure 5.1 shows that in Ethiopia, Kenya, Uganda, Benin, Nigeria, and to a lesser extent Senegal, pastoralists are excluded from education disproportionately to other groups. It also illustrates that pastoralist groups suffer from high drop-out rates and late enrolment in education, which results in a large proportion of young adults (17-22 years) with less than 2 years of education.

Source: UNESCO, 2010

Figure 5.1 Percent of the population aged 17 to 22 with fewer than two years of education and percent of primary school age children not attending primary school, by gender and membership of selected pastoralist groups.

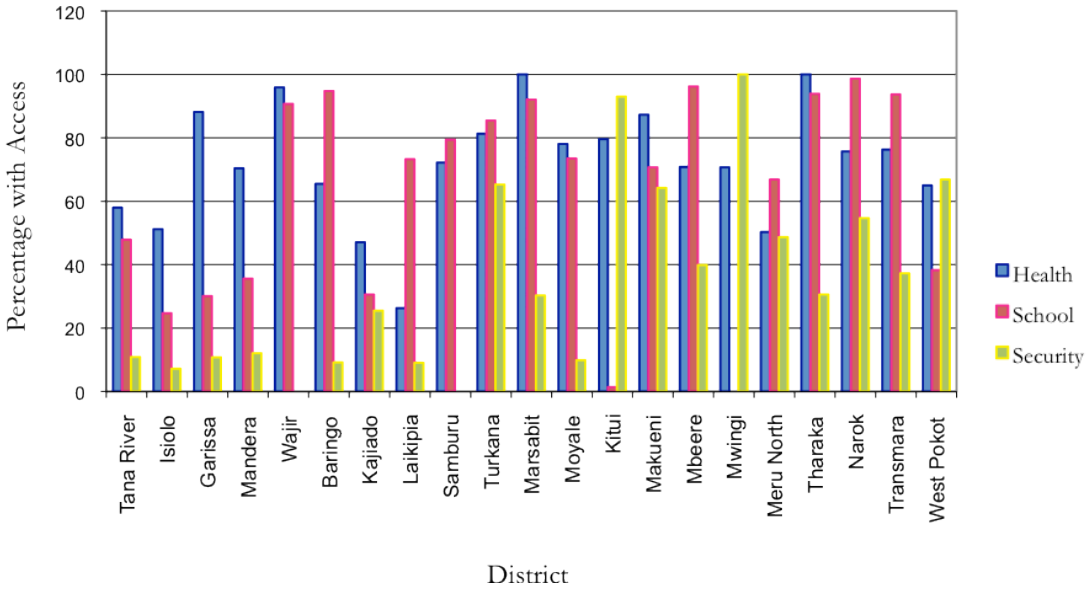
In Kenya, pastoral arid districts comprise the bottom ten districts for enrolment in education. Of the bottom ten districts, Tana River is third lowest with only 30.8 percent of the population over six years of age having ever attended school. This compares with a national average of 76.8 percent. Table 5.1 presents data for the worst performing districts. The disparity in enrolment between genders is also clearly evident, especially in the districts of Mandera, Turkana, Garissa and Wajir.

Table 5.1 Kenyan Districts with the lowest percentage of persons (age 6+) having attended school.

District	Male	Female	Total
Mandera	28.5	2	15.2
Turkana	26.6	6	16.3
Marsabit	20.5	14.6	17.6
Garissa	29.8	7.8	19.5
Wajir	35.5	7.1	21.2
Samburu	41	21.2	30.7
Tana River	38.5	23.4	30.8
Moyale	48.4	26	37.7
Isiolo	46.7	27.5	37.8
Average	**35.1**	**15.1**	**25.3**
National	**82.5**	**71.2**	**76.8**

Source: Ruto *et al.* (2009)

When the data from table 5.1 is considered in the context of data on 'access' to public services taken from Oxfam's draft ROSP (presented in figure 5.2), it seems that low school attendance cannot be explained by physical access alone. Clearly other factors also determine 'practical access'. This theme will be revisited later in the chapter, when factors such as role of children in the pastoral production system, household mobility and security issues are examined in greater depth with reference to the study data.



Source: Oxfam (2009)

Figure 5.2 Access to Health, Education Services and Security in Arid parts of Kenya in 2007

5.1 Changing Policy and Perceptions of Education

The lack of statistical information outlined above is compounded by the perfunctory attention paid to pastoralist groups in national educational policy in all but a few countries. Nigeria, Mongolia, and more recently Kenya, are notable exceptions (Aikman & El Haj, 2006). State education policy has been associated with efforts to get pastoralists to pursue a production system more in keeping with the narrow modernising imperatives of nation states (Krätli & Dyer, 2009). Resistance to sedentarisation is perceived by the state as proof of the widespread belief that pastoralists are resistant to change. This belief has been shown to be unfounded (Baxter & Hogg, 1990; Hogg, 1992; Ginat & Khazanov, 1998). If it does not present a threat to cultural continuity or management strategies, change is frequently embraced by pastoralists (Krätli, 2000). The persistent belief in pastoralists' intransigence is now being reassessed based on a deeper understanding of pastoralist livelihoods. There is now a growing acceptance, based in part on insights from non-equilibrium range ecology (as discussed in Chapter Four), that pastoralism is the most efficient and sustainable way of exploiting the natural resources of the drylands

(Aikman & El Haj, 2006). Pastoralist opposition to development interventions aimed at sedentarisation and intensification is therefore totally rational.

This reassessment of pastoralist attitudes to change implies that pastoralists may well value formal education, and their resistance to enrol their children, or participate themselves represents the incompatibility of current school-based provision with their livelihoods and culture. Some authors argue that pastoralists have always been open to formal education if it were not for the barriers associated with delivery, and curricula bias towards sedentary groups. This author takes the view that while this may be true to some degree, key processes of change that are affecting pastoral livelihoods (e.g. loss of access to land, and increasingly extreme and unpredictable environmental variability) are creating new demand for formal education, as diversification becomes more important in pastoralist management of risk. In the context of these changes to pastoral livelihoods, traditional forms of learning are increasingly seen as inadequate by pastoralists (Ruto *et al.* 2009). Poor communication and transportation infrastructure and lack of financial services makes it difficult for pastoralists to effectively market their produce when the need for cash arises. Structural inequality in market relations and terms of trade render pastoralists in a weak position to take advantage of any production surplus (Swallow, 1994).

In Kenya, droughts and flooding are occurring at shorter intervals which is compromising recovery and self-sufficiency following drought events (FAO, 2009). Increased pressure on grazing land and water because of expropriation by the state and by commercial enterprises, is escalating natural resource based conflict and insecurity. A consequence of these diverse processes is increasing poverty and dependence on external assistance, which has resulted in a heightened appreciation on the part of pastoralists, for the skills and opportunities that they believe formal education can bring.

5.2 Education and Universalism

There are two overlapping views on pastoralist education in the literature, one emphasises that the complex interaction between pastoralists and formal education has resulted in both positive and negative outcomes. The other is a less problematised view of pastoralist education. It regards education as key to finding pathways out of poverty for vulnerable pastoralists and as a basis for diversification into more secure livelihoods (Homewood, 2008). Krätli and Dyer (2009), for example, regard the positive effects of formal education as mediated by contextual considerations such as curriculum relevance and the potential of formal education provision to undermine the mode of production. While they still advocate for greater investment in education, the approach they advocate is more cautious. Education provision to nomadic groups is acknowledged as having the potential for negative as well as positive outcomes, depending on the contextual considerations discussed above, and the availability of employment opportunities in the drylands (among other factors), which will be examined with greater depth in following chapter.

5.3 State and Popular Perceptions of Pastoralists and Pastoralism

An important component in the wider issue of pastoralist education is the relationship between pastoralists and the state. The ways in which pastoralists and the state construct 'the other' plays an important role in determining which services are provided and how they are utilised. Due to the significance of perception in the success or failure of education services, this section will look at the effect that characterisations of 'the other' have on the provision and uptake of state education services in Africa's drylands.

Pastoralists are commonly perceived as resistant to change and culturally conservative. Terms commonly used by state representatives to describe pastoralists such as 'traditional', 'primitive' or 'backward', convey the negativity implicit in state perceptions of pastoralists (Hesse & MacGregor, 2006). There appears to be a kind of collective contradiction concerning the perception of the role of pastoralists within

Kenyan society. Pastoralists can at once be regarded as environmentally destructive, violent and a threat to the nation state, while in other circumstances be regarded with a kind of picture book romanticism, as reminders of a halcyon past. The romantic notion of the Maasai pastoralist as quintessentially Kenyan is generally referred to in an abstract sense, whereas when decisions on resource allocation or land rights are concerned, the destructive, violent and backward characterisation of pastoralists is routinely invoked, both as the reason for poor returns on investment in arid areas, and the justification for withholding further resources. A more accurate description is that the state perceives pastoralists as 'anti-modern'. This transcends the bi-polar opposition of modern vs. traditional (Wolf, 1982) and alludes to the notion (discussed in Chapter Three) that the persistence of pastoralism goes beyond not fitting with representations of the 'modern' and with 'modernity', but to some degree actually undermines a collective sense of modernity and progress in the popular consciousness. This is particularly true among an emergent urban middle-class who are, crucially, part of a demographic likely to have a role in state decision-making and resource allocation.

It is worth considering why the state and the wider public form such firm perceptions, largely in the absence of any direct experience of pastoralists or their livelihoods. History, education, media and science have all played their role in shaping popular conceptions of pastoralists. As outlined for the Orma in Chapter Three, the extensive and mobile nature of pastoral production has led to resource conflict between pastoralist groups and with agriculturalists across Kenya and more widely across East Africa. The experience of such conflicts combined with a lack of understanding of the pastoralist mode of production has resulted in a characterisation of pastoralists as inherently violent and outside of broader conceptions of national unity.

Childhood education plays a fundamental role in forming popular perceptions of pastoralists. Pastoralism is generally represented in a negative light within the

Kenyan national curriculum. Krätli and Dyer (2009) cite extensive examples of primary school learning materials that portray pastoralism and pastoralists as outmoded and irrelevant to 'modern' Kenya. The same is true of media representations of pastoralists, which reaffirm misconceptions formed at school. Stories in national newspapers all over East Africa (Walsh, 2007) portray pastoralists as practising ritual violence without engaging with the natural resource competition which underlies such conflicts. There are countless ministerial pronouncements and statements calling for pastoralists to settle and contribute to the national economy as 'modern livestock producers' (Hesse & MacGregor, 2006). Western science has contributed to the misrepresentation of pastoralism by lending scholarly affirmation to existing negative perceptions, while also erroneously adding environmental destruction to the cadre of reasons to regard pastoral livelihoods in a negative light. The 'cattle complex' (Herskovits, 1926) and the 'tragedy of the commons' (Hardin, 1968) are both concepts which affirm negative perceptions of pastoralists, and despite being shown to be unrepresentative of the reality of pastoral production (Ellis & Swift, 1988; Scoones, 1995), their shadow still looms over popular perceptions of pastoralism.

Having reviewed the basis for state and popular perceptions of pastoralism, the barriers that these perceptions put in place for appropriate provision of education services are examined below. The chapter then goes on to look at the ways in which both physical and ideological barriers manifest in the provision of education services to pastoralists.

5.4 Barriers to the Provision of Appropriate Education Services

The nature of pastoralist livelihoods presents certain physical and logistical barriers to the provision of appropriate education services which have been designed for sedentary people in well-connected and densely populated areas (Krätli & Dyer, 2006). Low density and scattered populations mean that school children are expected to travel long distances in areas of poor security. The high labour demand of dryland

herd management strategies requires contributions from all members of the household including children (Molteno *et al*. 2000; Anis, 2008). Environmental conditions are often difficult for teachers not accustomed to life in the drylands, this results in poor motivation, extended absences, and isolation from the community. Household mobility adds further impediment to the practicality of the sedentary school model of education provision in arid areas. Evidence from UNESCO's 2010 'EFA World Monitoring Report' clearly shows the consequences of armed conflict on education through processes of marginalisation. Over one-third of primary school age children who do not attend school (25 million in total) live in conflict-affected poor countries (UNESCO, 2010).

It can be argued, however, that many of these physical and logistical barriers are surmountable with proper levels of investment. The greater impediment to the provision of appropriate education services to pastoralists are undoubtedly 'ideological barriers' based on the misconceptions concerning pastoralist livelihoods described above. Such barriers justify inaction on the part of policymakers, as appropriateness of provision is not acknowledged as a significant factor to be addressed in improving education enrolment.

These 'ideological barriers' are founded on the state's narrow conception of 'development' and 'progress', and on the belief that 'modern life' and pastoralism are mutually exclusive (Krätli, 2001). Pastoralism is viewed as a relic from the past, which is in natural decline as the country modernises and the remotest corners are drawn fully into the market economy. Ideological barriers present themselves as part of the state's view on the nature of citizenship (Dyer, 2006). In the state's view, pastoralists are essentially autonomous which is perceived as a challenge to the authority of the government and a potential threat to the nation state (particularly in Tana River District, for reasons discussed in Chapter Three). Pastoralists are perceived to contribute little to the national economy and are therefore not 'good citizens', consequently requiring modernisation.

The results of these various barriers to the provision of appropriate education services can be summarised as: lack of recipient orientated services; under-investment; and poor uptake. The belief that pastoralism is in decline results in provision of education services that are not tailored to the requirements of mobile communities. Mobility is framed as unnecessary and/or irrational by the state, which shifts the responsibility for poor education provision and uptake, onto the pastoralists. Poor quality static services are provided on the assumption that pastoralists will sedentarise eventually. This belief is founded on a lack of understanding of pastoral production strategies, and results in poor uptake of education services by pastoralists. This poor uptake then serves to justify lack of investment in more appropriate service provision on the basis that investment in the drylands gives poor returns. This cycle presents a serious ideological barrier to be surmounted if more appropriate services are to be provided in the drylands.

The fact that education is viewed as a tool to modernise pastoralists presents another significant ideological barrier to the provision of appropriate services in the drylands. If education content and provision serve to modernise pastoralists, and transform them into modern livestock keepers, this clearly represents an unacceptably antagonistic attitude to pastoralist culture, and will predictably result in poor uptake of services. Indeed, state conceptions of 'development' and 'progress' are unacceptably narrow concerning pastoralism (Dyer & Choksi, 2006). Pastoralists are essentially presented with a 'set-menu' of development (Krätli, 2001) whereby they are forced to imitate modern livestock producers, regardless of the contextual realities which render such notions of 'modernity' purely symbolic and non-functional. Pastoralism and 'modern life' are regarded as mutually exclusive stages of human development. This framework offers no ground on which pastoralism and 'modernity' can meet (Krätli, 2001). Under this framework, education cannot be conceptualised as a tool for diversifying pastoral livelihoods and enhancing rural-urban linkages. There can be no recognition that such new hybrid forms of livelihood

can be 'modern' and productive. Adaptations and continuities from 'traditional' livelihoods do not fit with the state's vision of 'modernity', which is defined in opposition to tradition.

5.4.1 Pastoralist Perceptions of the State and State Services

Pastoralists form their opinions and perception of the state and state services through word of mouth, personal experience, and to a lesser extent through broadcast media. Young Orma pastoralists are aware of the *'shifta war'* and the role of their fathers and uncles in fighting the newly formed independent government in the 1960s. This has clearly left its mark on the Ormas' own perception of their marginalisation from Kenyan state power systems. Very low levels of education combined with poor communication and transportation infrastructures results in a poorly defined conception of the role of the state among Orma communities. This is particularly understandable when many encounters with the state are characterised by self-interest on the part of state representatives. This might be Police, General Service Unit (GSU)[70] or Kenya Wildlife Service (KWS) demanding bribes. District veterinary officers often request livestock as a form of payment for services that are meant to be provided without charge. Some informants were unclear on the source of food aid and believed it to come from the state as opposed to the WFP. It is this nexus of state, NGO and commercial activity and interests, in which the role of the state and thus the perception of the state become confused. As Krätli (2001 p.42) states;

> *"As school is perceived as a government's venture, the way people see it, despite the visible advantages, remains entangled with their general impression of the state as potentially helpful but ultimately unpredictable, and therefore not trustable"*

For the Orma, perceptions of state education are entangled with wider perceptions of the role of the state in the expropriation of grazing lands, in restricting their ability to defend their grazing lands militarily and, as alluded to above, the short term provision of services by NGOs, which are only supported for project cycles of

[70] The General Service Unit (GSU) is a paramilitary wing of the Kenyan State Military and the Kenyan Police.

typically three to five years. Such confusion surrounding the providers of services and the erratic withdrawal of certain services undermines the ability of the Orma to rely on services without maintaining parallel networks. Indigenous institutions and networks founded on social capital and kinship ties act as a safety net in the event of interruption or withdrawal of state services. The benefits, even of poor quality public services, cannot therefore be fully realised when they cannot be relied upon.

Research and dialogue with pastoral peoples has produced a deeper understanding of both the rationale for pastoralist livelihood strategies and of the basis for decision-making with regard to utilisation of services. The idea that pastoralists are ideologically immovable in their opposition to formal education is regarded as increasingly outdated and unconvincing (Carr-Hill & Peart, 2005). Pastoralists' decisions concerning education of their children must be understood as a complex calculation of risk, costs and benefits.

The decision to enrol some or all children in education is dependent on perceived net benefits. These benefits are dependent on education quality, the opportunity cost of lost production and herd growth, the presence of employment opportunities for primary school graduates, the safety of children (particularly girls), the effort and expense of replacement labour, and the perceived cultural appropriateness of the school environment. It is therefore a complex decision which has wide reaching impacts, in both the short and longer terms, on the household economy and cultural continuity. Ogbu (1987, 1992) discusses 'oppositional identity' with reference to the concerns of marginalised groups over cultural subjugation by a dominant group. This principle resonates with the concerns of Orma pastoralists regarding the role of education in eroding their culture through enculturation of the youth into a different tradition. Ogbu outlines 'boundary maintaining mechanisms' by which marginalised groups seek to differentiate themselves and prevent cultural subjugation by amplifying the significance of key cultural practises and beliefs. Through these mechanisms, minorities also reject the values and symbols associated with the

dominant group (Shahbazi, 2006). In the context of education provision, the symbolic resonance of formal education as a form of cultural dominance is at odds with the emerging acknowledgment, on the part of pastoralists, of the practical value of education in the 'modern' world. These 'boundary maintaining mechanisms' are a direct response to coordinated attempts at cultural assimilation using education provision to incentivise sedentarisation (Fratkin *et al.* 1999; Dall, 1993). Education content delivers a form of 'cultural propaganda' by undermining indigenous knowledge and cultural practises with reference to an unimpeachable and oppositional 'modernity'. With reference to both their separatist history and their 'oppositional identity', and in response to attempts at cultural assimilation, it is unsurprising that Orma pastoralists, rather than perceiving themselves on the fringes of society, actually perceive themselves as part of a different society (Anis, 2008).

Formal education as a process of cultural assimilation has a long history (Sifuna, 1987). In many countries schooling of children aimed at cultural assimilation to produce 'productive citizens' (whether that be a modern livestock producer or a factory worker) has been regarded with distrust, as an ideological state project. A study by UNICEF Somalia (Jama, 1993) emphasised the extent to which pastoralists are aware of the risk of cultural alienation involved in sending a child to school.

In summarising pastoralist perceptions of the state and state services, it must be emphasised that the views and expectations of various pastoralist communities will inevitably vary according to specific contexts, groups and histories of engagement with the state (Carr-Hill, 2006). The importance of concerns around cultural assimilation will also vary to some extent with well-being levels. In a situation whereby pastoralism has become unviable because of both herd and social network collapse, concerns about cultural continuity may take second place to concerns about survival. In this case any form of education perceived to offer the chance of access to new and wider networks may be preferable to either the marginal benefit of the

child's labour to the household or using the capital to reinvest in a dwindling sedentary herd.

5.5 The Education of Girls

Most barriers to accessing education services stem from lack of appropriate provision, access, and funds. However, pastoralists are also perceived to have ideological barriers preventing access to appropriate education services. One of the most commonly cited barriers being their attitude to the education of girls. Equal access to primary and secondary education for both genders was one of the key goals adopted by the representatives of the 164 countries who signed the 'Dakar Framework for Action' as part of the 'World Education Forum' in April 2000. The goal of gender parity in education was also incorporated into the MDGs. MDG target 3a aims to:

> *"Eliminate gender disparity in primary and secondary education preferably by 2005, and at all levels by 2015"* (UNDP.org, 2011).

International development goals related to gender parity in education reflect insights by Caldwell (1979) concerning the role of education in lowering both mortality and fertility rates. His analysis of Nigerian surveys showed that a mother's education is a far more important determinant of childhood mortality than familial economic markers, including father's occupation. In light of these insights and subsequent studies (Brass & Jolly 1993; Dow *et al.* 1994), it is clear that girl's education has knock-on positive effects across generations, and rightly forms one of the most urgent international development goals.

This section will examine some of the reasons why girls make up most of the out-of-school children in pastoral societies and are more likely to drop-out once they are enroled. This informs the analysis of empirical data concerning gender parity amongst Orma pastoralists covered in the following chapter.

5.5.1 Ideological Opposition to the Education of Girls

The restricted educational opportunities available to pastoralist girls compared with boys were outlined in the introduction to this chapter. Table 5.1 quantified the educational disadvantage faced by girls in the arid and semi-arid districts of Kenya. The most common explanation for pastoralists' perceived unwillingness to educate girls is their ideological opposition. This is commonly framed as 'cultural conservatism' or a general 'resistance to change'. Practical concerns related to education provision modalities are rarely considered as the basis for pastoralists' reluctance to educate girls. Undoubtedly such an ideological opposition does exist. The notion that girls have a right to education that is equal to that of boys is not consistent with prevailing values and beliefs in many pastoralist communities (Leggett, 2005). This is true of Orma pastoralists and more widely among pastoralist communities across Kenya (Makau, 2000) and Africa (Csapo, 1981; Niles, 1989; Wynd, 1999). However, there are a number of legitimate practical concerns surrounding the education of girls which may be more significant than purely ideological issues in the decision-making process. Consequently, while gender bias undoubtedly exists, it does not necessarily constitute the most important factor nor does it operate in isolation. It has been argued (Krätli, 2000), that ideological barriers to the education of girls are over-emphasised in the literature, and that this absolves service planners and policy-makers of the responsibility for achieving gender parity by casting blame solely on the recipients. There is no acceptance on the part of the state that inappropriate service provision is equally important as pastoralist ideological considerations, in poor uptake of services. Indeed, there are a number of educational initiatives, that will be examined later in the chapter, which demonstrate that when an acceptable educational environment is available, pastoralists will enrol girls in large numbers (the ABEK programme reported up to 67 per cent of students were girls) (Carr-Hill & Peart, 2005).

5.5.2 The Role of Poverty in Gender Parity

The basis for the difference in opportunities of boys and girls can be grouped under several headings: ideological barriers; girls' contribution to household work; moral

and cultural erosion; safety; education as investment; and the importance of bridewealth. Ideological barriers pertaining to the education of girls have been outlined above. Before going on to look at other factors which diminish the educational opportunities open to pastoralist girls, the pervading influence of poverty must be examined. Accessing education almost always incurs a cost. As described earlier in the chapter, those costs may be direct, in the form of school fees, equipment, uniforms and food, or indirect, in the form of lost contribution to the household economy or reduced mobility leading to lower production. When families cannot afford to send many children to school, the ones chosen are more likely to be boys. However, while poverty may reduce the number of children a household is able to enrol, the role of poverty in exacerbating gender imbalance is unclear. There is a lack of research on East African pastoralists in this area, although existing studies suggest that reducing poverty will be insufficient to address gender imbalance in education. Colclough *et al.* (2000) conducted detailed school surveys in Ethiopia and Guinea. They found that gender imbalance in schooling outcomes will not necessarily be reduced as incomes rise. These findings suggest other factors are more important in influencing parental decisions concerning the enrolment of their daughters. Some of the factors influencing parental decisions to educate their daughters are discussed below.

5.5.3 Gender Defined Work

In the pastoral context, factors such as the contribution of children to the production and consumption needs of the household have an influence on education decisions. While boys often contribute to household production through herding, they rarely contribute to domestic work, whereas girls are often expected to contribute to both types of work (Leggett, 2005). Save the Children commissioned a study (Molteno *et al.* 2000) in Mali into patterns and perceptions of children's work. The results showed that 85 percent of 7 year olds work for at least 6 hours per day, with girls having a significantly higher workload than boys. From a very early age girls are socialised into roles such as: contributing to the herding of smallstock; fetching water; preparing food; sterilising milk containers; watching over younger children;

and assisting elderly relatives. In this situation, it is little wonder that mothers can be reluctant to relinquish the help of their daughters, particularly in the context of the perceived risks involved in education discussed below.

5.5.4 Moral and Cultural Erosion

Within a pastoralist society, from the age of 13-14 years, a girl may be married and be expected to run a household. She must have been trained in the traditions of the clan and have mastered all domestic duties including building houses, packing the house for migration, childcare, taking care of smallstock, and many other domestic skills. It is unsurprising that attendance at school is considered to dilute the quality of traditional education and training, and make girls less eligible for marriage, particularly if the suitor has large herds and moves regularly.

Daughters are supervised closely in pastoralist culture. Pregnancy, without an immediate proposal of marriage, brings shame on the extended family, and ruins the chance of a future marriage and dowry (Abu-Saad *et al.* 1998). For this reason, once girls start to show signs of sexual maturity they are not permitted time alone with males (Leggett, 2005). A coeducational school environment run by teachers from a different ethnic background, and often some distance from home, is seen as culturally unacceptable. Parents fear their daughters being socialised in a different tradition, compromising cultural continuity and the moral (and sexual) customs of their daughters. The Karimojong regard school as a situation in which girls are 'dis-educated' (Owiny, 1999). Boys are believed to be more attached to the livestock and by extension to their culture, partly because they will inherit the family herd which they need in order to marry. By contrast, girls spend a limited period of time within the family and will receive no inheritance. Lack of supervision runs the risk of pregnancy or elopement whereby a dowry is not forthcoming and shame is brought on the family.

5.5.5 Safety Concerns

The long distances that pastoral children must travel to get to school, often through sparsely populated insecure areas close to national borders, means that girls in particular are at risk of sexual attack and abduction (Sifuna, 2005). There are also many stories of girls being sexually abused by teachers or fellow students when they attend school far from their family (Krätli, 2001; Oxfam, 2005). These risks make parents apprehensive about sending their daughters to school, particularly when cultural norms dictate that girls spend almost all of their time with age mates and women (especially after the onset of puberty) (Krätli, 2001).

5.5.6 Education as Investment and the Importance of Bridewealth

Investing in the education of children can be regarded as an investment in the future of the family, whereby educated children can gain access to well paid jobs in urban centers and contribute to educating their younger siblings and supporting their parents in old age. However, as girls move to a different household with marriage, any investment in the education of girls is unlikely to benefit the parents. Any benefit resulting from a girl's education will accrue to the girl's marital family (Sifuna, 2005). Under such circumstances educating one's daughter may not be regarded as a good investment (Roth, 1991). More than just being a poor investment, the education of girls can actually be regarded as a liability in a socio-cultural context in which a husband is meant to be more educated than his wife. Enroling a girl in school for a couple of years until she reaches puberty and must be withdrawn to marry, is often regarded as a poor use of resources. Without completing primary school, education is regarded as having little value (Krätli, 2001).

There is a particular imperative to marry-off daughters young in polygamous pastoral societies where there is a relative shortage of females (Carr-Hill & Peart, 2005). Indeed, a daughter's dowry or 'bridewealth' has an increasingly important role within pastoral livelihood strategies (Krätli, 2001). As herds get smaller, families become more reliant on bridewealth for survival and socio-cultural reproduction. Pressure can be put on girls to accept their suitors and marry young by their brothers,

who themselves cannot marry until the family has received the bridewealth. The growing importance of bridewealth affects livelihood decisions concerning the education of girls and the forming of strategic unions with other clans and families. Beyond the value of livestock, bridewealth is also associated with an increase in the social capital of both families joined in marriage (Carr-Hill & Peart, 2005). As outlined in Chapter Two, the importance of social capital in the pastoral context cannot be over-emphasised. The fact that pastoralists regard schooling their daughters as potentially compromising bridewealth and associated social capital, serves to underline the importance of reducing the perception of risk associated with the school environment if gender parity in education is to be addressed.

5.5.7 Summary of Education Gender Parity Issues

In addition to the many factors outlined above, which reduce the chances of girls being enroled in school, there are also a number of factors which reduce the quality of education received by girls once they have been enroled. The pervasive practise of female genital cutting (FGC), which is routinely practised among Orma pastoralists, can result in lengthy absences from school or complete drop-out due to its link with perceptions of sexual maturity, and the practise of gender segregation (FFE, 2006; Ruto *et al.* 2009). Girls often miss the start of lessons because they have to fetch water to prepare lunch (Anis, 2008). Findings from the 'Araro Hanakis' Alternative Basic Education Center (ABEC) in the Afar region of Ethiopia showed that girls arrived 30 minutes to 2 hours after classes had started because of time spent fetching water and firewood for the preparation of lunch. The result is that girls may receive an average of 12-50 percent less teaching time than boys (Anis, 2008).

It can no longer be considered sufficient to address gender imbalance in education by running projects to sensitise pastoralists to the importance of sedentarisation and educating girls. Based on survey data collected at Korr in Laisamis District, Kenya, Fratkin *et al.* (1999) demonstrated that for Rendille pastoralists, sedentarisation alone does not affect parental decision-making concerning the education of girls. There must therefore be recognition on the part of the state that pastoralists' concerns

regarding the education of girls are legitimate, and result from provision of education services which are at odds with prevailing socio-cultural values and beliefs.

A more practical way to address the education of girls is to set about removing the basis for opposition associated with non-ideological barriers. For example, based on the factors restricting girl's access to education described above, addressing pastoralist aversion to mixed gender education by providing tailored services[71]. Scheduling lessons such that they are synchronised with periods when girls have least work commitments. Addressing concerns over safety getting to and from school, and by tackling fears regarding cultural continuity by training teachers from pastoralist communities. With these positive policies in place, the perceived risks associated with educating girls would be diminished which could only enhance educational opportunity. These themes will be revisited in more depth later in the chapter with reference to the fieldwork data.

5.6 Education Policy in Kenya

5.6.1 History of Education Policy in Kenya

In order to understand the political landscape in Kenya, as it relates to education policy, it is essential to have a sense of what has gone before and what factors have shaped the development of education policy. In Chapter Three, the history of the Orma was examined with reference to Tana River District and their relations with neighbouring ethnic groups. By combining these insights with an understanding of the history of Kenya's education policies (as they relate to pastoral areas), the analysis of empirical fieldwork data can be properly situated within the wider historical context. Situating the fieldwork data historically obviates some of the dangers of a 'snap-shot' analysis which can lack detail and depth in its appreciation of underlying issues and power dynamics.

[71] See Leggett (2001) for an example of a successful girls only primary school.

A good place to start, in terms of the trajectory of education development in Kenya, is by reviewing colonial policies. Education policies in the colonial period primarily reflected the needs of the colonial administration rather than a belief in education as a 'right'. The early development of schooling in Kenya in the colonial period was intimately bound with missionary work. Pastoralist districts, such as Tana River, were in effect 'closed districts' during the colonial period. Entry and exit by road was strictly controlled hence missionary activities were minimal. While missionaries did establish some schools in Maasailand before the First World War, the Muslim pastoralists of North Eastern and Coast Provinces were almost entirely ignored (Carr-Hill & Peart, 2005).

This produced a pattern of schools that reflected colonialist settlements, which were predominantly in agricultural districts (Ngome, 2005). The objective of state education, which was aimed at European and some Asian children, was to provide a good standard of education for colonists while limiting the education of Africans. Enough Africans were educated to service the administrative requirements of the colonial state without producing any surplus. This strategy was intended to limit the number of unemployed educated Africans to articulate dissent against the colonial state. The side-effect of this, at least until the late 1980s was that education was perceived as synonymous with employment (Carr-Hill & Peart, 2005).

Following the 1961 Addis Ababa Conference of African States, the primary policy focus among emerging Kenyan leaders was firmly on the expansion of education systems as a path to 'development' (Sifuna, 2005; Carr-Hill & Peart, 2005). Education, as a vehicle for both personal and national development, had by the time of Kenyan independence (1963), achieved near universal currency. When Kenya's first ruling party, Kenya African National Union (KANU), pledged seven years of free primary education in its 1963 manifesto (MOEST, 2005; Sifuna, 2007) the stage was set for education to play a central role in Kenyan politics. Low educational participation rates in pastoralist districts, therefore, began to be regarded as a

political problem. As outlined in Chapter Three, districts that were home to successionists such as Tana River and most of Northeastern and Eastern Provinces, were not included in such nationalistic ideas of unified progress, and were not regarded as deserving support from a government that they had not supported against perceived aggression from the Republic of Somalia (Lewis, 1963). In 1964 the first post-independence Education Commission, popularly referred to as the Ominde Commission, was mandated with charting a new education policy (Ruto *et al.* 2009). The Commission outlined the national goal of 'Universal Free Primary Education' and set forth a strategy for achieving educational equality for Kenya's marginalised groups (GoK, 1964). This issue came to prominence during the 1969 elections whereby tackling geographic disparities in education provision became a key election promise (Sifuna, 1987). Evangelou (1984) highlights that the attention given to pastoral districts in electoral campaigns reflected a wider interest on the part of policy-makers in the late 1960s in the potential for pastoral areas to make a positive contribution to building the national economy.

The politicization of geographical education disparities resulted in a variety of initiatives, most notably the expansion of boarding schools in pastoral districts. The policy of boarding school provision went back to the colonial period (Turton, 1974) although as described above, existing provision at independence was concentrated in non-Muslim districts. As part of the 1970-74 Development Plan and with the support of the World Bank, the Remote Areas Boarding Programme (RABP) was launched (Sifuna, 2005). The policy, while well intentioned, functioned poorly except for schools located in urban centers. Pastoral districts were no longer 'closed districts' and the provision of low-cost boarding schools resulted in an influx of children from non-pastoralist ethnic groups (Ponsi, 1988). Following a presidential decree in 1971, primary school tuition fees in districts having 'unfavourable geographical conditions' were abolished, in 1973 a second decree abolished primary school tuition fees throughout Kenya for grades I-IV and set in place a uniform fee structure for grades V-VII (Sifuna, 2005). Fees for all grades of primary school were abolished

completely shortly afterwards. This caused a dramatic 60 percent increase of enrolment, but pastoralists' response to the RABP continued to be low. By the time of the 1974-78 Development Plan, an evaluation of the RABP found that pastoralist were not utilising boarding schools and this was viewed as symptomatic of the lack of regard for education among pastoralist communities (GoK, 1974). The modality of provision was not questioned and funding was cut.

The provision of free primary education had minimal results in pastoral areas, largely due to the almost complete absence of any planning for its implementation. Facilities were almost non-existent and learning and teaching materials were in hopelessly short supply. In order to overcome such shortfalls, The State took responsibility for recurrent costs while parents were expected to provide cash or labour to construct or expand schools. Parents also had to buy textbooks and exercise books, and school committees began imposing fees. These various fees were different in each district but in most cases they ended up being higher than the abolished tuition fees (Sifuna, 2005). By 1977 the government acknowledged that ''such increasingly compulsory contributions contravened the intention of the Government to provide greater access to primary schooling'' (GoK & UNICEF, 1978).

While the provision of 'free' primary education did not significantly enhance enrolment in pastoral areas (Nkinyangi, 1982), it did increase provision and enrolment nationally. By 1977 only six districts were enroling less than 50 per cent of their estimated school-age population, all of which were pastoral districts (Leggett, 2005). An initiative which was more successful in increasing enrolment in pastoralist areas was the WFP School-Feeding Programme (SFP). While the long-term positive effects of the programme are debatable (Carr-Hill, 2006; Ngome, 2002 cited in Sifuna, 2005) it is has had a consistent impact on educational participation. A request was made by the Kenyan Government for assistance from the WFP following the severe drought of 1979. Due to the widespread loss of pastoralists'

livestock resulting from the drought, in 1980 the WFP launched the SFP to address child malnutrition and enhance enrolment.

5.6.2 Recent History Of Education Policy in Kenya

In the late 1980's the Kenyan Government was compelled through conditions attached to development loans to implement the World Bank and International Monetary Fund's (IMF) Structural Adjustment Programme (SAP) through the Education Sector Adjustment Credit System (EDSAC). In line with the principle of austerity central to SAPs, it was recommended that the education budget be cut (Government of Kenya & UNICEF, 1992). The effect of this was the shifting of the financial burden of education provision onto the recipients, which resulted in a policy of 'cost-sharing' (Otieno & Colclough, 2009). Implemented in 1988, the policy required parents to finance the costs of primary and secondary education. The 'World Conference on Education for All' took place in Jomtien Thailand in 1990, and Kenya was a signatory to the resulting declaration. However, the policy of 'cost-sharing' that was to underpin the financing of primary education in Kenya for the subsequent decade did not sit comfortably with the stated objectives in the Jomtien declaration (Leggett, 2005). In fact, 'cost-sharing' resulted in profoundly negative effects on educational equity and overall enrolment (Olembo & Waudo, 1999; Makau *et al.* 2000) in direct contradiction to the aims of Jomtien. The 'cost-sharing' model of financing public education was hugely unpopular (Leggett, 2005). The Government failed to develop new 'delivery systems' as encouraged by the Jomtien Declaration, consequently pastoral districts suffered disproportionately under the policy of 'cost-sharing' (Leggett, 2005). Despite overall expansion in primary provision in the 1990s, the decade was characterised by 'falling enrolments and failing schools' (Republic of Kenya & UNICEF 1999).

The World Education Forum was held at Dakar in April 2000 and the resulting 'Framework for Action' specifically mentioned nomadic pastoralists as belonging to the group that needed to be targeted for education interventions (FFE, 2006). The abolition of tuition fees and broadening access to education were key elements of the

Dakar Framework for Action. Fee abolition was championed by the National Rainbow Coalition (NARC) in its successful election campaign of 2002. NARC's first policy initiative in education was to abolish primary school fees (Sifuna, 2005). Political expediency precluded adequate time to plan and resource the implementation of free primary education which resulted in the re-introduction of various fees and levies as had happened in the 1970s. This resulted in minimal expansion of enrolment among marginalised communities to whom cost is a significant barrier to participation.

Following concerted lobbying in the 2000s for explicit inclusion of pastoralists in Kenya's Poverty Reduction Strategy Paper (PRSP)[72] by Kenyan and International NGOs, a new ministry was formed in April 2008 to exclusively oversee development in Kenya's arid and semi-arid lands (Ruto *et al.* 2009). The new Ministry of State for the Development of Northern Kenya and Other Arid Lands (MSDNKOAL) requested that SOS Sahel and the International Institute for Environment and Development (IIED) (UK based NGOs) assist MSDNKOAL in drafting a Nomadic Education Policy for Kenya. The Government of Kenya is also in the process of establishing a National Commission for Nomadic Education in Kenya (NACONEK). Its role is to take a lead on reform of nomadic education policy in Kenya (Swift, 2010).

5.7 Types of Schooling

Having outlined the history of education policy for pastoralists in Kenya, this section will look briefly at the manifestation of such policies in terms of modalities of education provision, both within Kenya and more widely. Different forms of formal and non-formal education[73] have been developed as a means for providing education

[72] PRSPs are essentially a rebranding of the Bretton Woods Structural Adjustment Programs (SAP) which gave the World Bank and the International Monetary Fund (IMF) channels through which to influence domestic policy (Gould, 2005).

[73] 'Formal education' is taken to refer to the structured education system provided by the state or by certified private providers. It is usually based on the western curricular model and takes place in permanent school buildings. 'Non-formal education' refers to education which takes place outside of recognised educational institutions and is adapted to the needs of disadvantaged groups.

to pastoralist children (Lugano & Abdi, 2003). Boarding schools, mobile schools, distance learning and alternative pedagogical approaches, such as Alternative Basic Education (ABE), comprise the range of institutional responses to educational exclusion of mobile pastoralists. The many barriers to pastoralists accessing education are particularly relevant in the case of formal education. Pastoral mobility does not fit with an approach physically organised around permanent buildings and settled communities (Aikman & El Haj, 2006). More recent innovations in education provision to mobile pastoralists reflect a deepening understanding of pastoral livelihoods. The consequence of this slow dawning of comprehension among institutions working on pastoral development is that educational strategies are less likely to be founded on the basis that pastoralists should adapt their livelihoods to access services. Increasingly, institutional rhetoric, and to a lesser extent, institutional actions reflect an acceptance that services should be accessible by the intended users without compromising their livelihoods or cultural beliefs. Generally, formal approaches aim to bring the child to the school whereas non-formal approaches endeavor to bring education to the child.

5.7.1 Formal Education or 'Child to School Approaches'

There are well-documented instances whereby formal education has been a successful strategy for educating the children of pastoralists. Communist era Mongolia is the most commonly cited example (see Krätli, 2000 for a good summary), although socio-cultural and economic specificities set these examples apart from what is possible in the African context. There has been some qualified success with the provision of boarding schools in Africa's drylands. Day schools in remote pastoralist districts have fared less well. In most cases the failure of day schools on almost all criteria (enrolment, retention, quality of teaching, cultural sensitivity, reliability, capacity, access, availability of learning materials, gender equity and cost) has been the main stimulus, in conjunction with the political agenda, for the widespread experimentation with alternative provision modalities that has taken place in the last ten years. Primary schools in pastoral districts are invariably taught by a few teachers with no training on multi-grade teaching methods (Anis,

2008). Teaching a multi-grade class need not offer inferior education but requires more intensive use of learning materials and requires a more skilled teacher than single grade classes (Aikman & El Haj, 2006). The reality in pastoral areas is a lack of adequate teaching materials and teacher training even for single grade classes, quite apart from the additional requirements of a multi-grade classroom. In pastoralist primary schools the language of instruction is rarely the local language. Qualified teachers from the local community are rarely available so lessons are frequently taught in a language that learners do not understand. It is now widely acknowledged that better results are achieved when children are taught in their first language (especially in grades 1-3) (UNESCO, 2008; FFE, 2006). Lessons in pastoralist primary schools are scheduled around office hours rather than around the availability of the learners. Classes are also not gender segregated, which is a cultural prerequisite for pubescent girls in Muslim communities. Examples of gender segregated primary schools have proven to be hugely successful in isolation but the innovation has not been scaled-up (see Oxfam, 2005 for examples).

Neither parents nor children enjoy prolonged periods of separation. If the environment in which the children will be cared for is not socially or culturally acceptable to parents, this forms a significant barrier to enrolment. The inability to monitor and supervise girls for prolonged periods is particularly problematic to many pastoralist communities. There are, however, isolated examples of government boarding schools that do appear to have enrolled and retained children from pastoralist groups albeit predominantly boys (Carr-Hill, 2006). However, on the grounds of social and cultural acceptability and cost, government provision of boarding schools for pastoralists is generally regarded as a failure (Ponsi, 1988; Sifuna, 2005; Aikman & El Haj, 2006). In Kenya, the unpopularity of boarding primary schools has meant that the vast majority of schools built in the last decade are day schools. The use of boarding schools for pastoralist education goes back to the colonial period (Turton, 1974) although they were primarily promoted during the 1970s and 80s. The Remote Areas Boarding Programme of the mid 1980s, which is

said to have deteriorated after the introduction of cost-sharing in 1988, the World Bank Arid Model Schools, and UNICEF's girls' boarding schools were all initiatives described as successful although many of them have now closed because of underuse (Lugano & Abdi, 2003). Despite the marginal contribution of boarding schools to extending education provision (particularly for girls) their expansion continues, largely at the hands of religious organisations and NGOs (Leggett, 2005). Popular boarding primary schools in Kenya are used by pastoralists who live near urban centers. Pastoralists who still practise a nomadic way of life, who constitute the majority, are reluctant to give custody of their children to people they do not know while they search for pasture and water. This led the Arid Lands Resource Management Project to begin experimenting with mobile schools in ASAL districts (Sifuna, 2005). The chapter now goes on to examine mobile schools and other forms of alternative/ non-formal education provision.

5.7.2 'School to Child' Approaches

Non-formal education incorporates mobile schools, satellite schools, distance learning, static schools utilising alternative pedagogies and any learning activity outside the formal school system. The emergence of non-formal educational approaches was bolstered by the Jomtien Conference (1990) which emphasised the need to adapt formal education to the requirements of 'children in difficult circumstances'. Complementary and alternative non-formal approaches are regarded as promising strategies for progression towards achieving EFA and MDG targets, particularly in light of the perceived failure of formal education provision (Carr-Hill & Peart, 2005). Non-formal education has the potential to overcome many of the barriers to education enrolment and participation outlined above. Timing of classes can be adjusted to fit with the responsibilities of pastoralist children (Anis, 2008), mobile schools and distance learning mean that pastoral mobility can be maintained and children do not travel large distances alone to get to school. Non-formal education is more likely to be conducted in the local language by a pastoralist teacher, thus allaying fears concerning cultural assimilation. Girls can access education while still under the supervision of their parents and gender segregated

classes for older learners can facilitate access to education for girls from Muslim pastoralist groups.

Alternative Basic Education (ABE)

ABE is a specific model of non-formal education, it is the most prominent of many (e.g. the Ngorongoro Early Childhood Development programme), and was preceded by earlier initiatives such as the Out-of-School Programme (OOS) in Samburu district Kenya. The OOS programme started in 1992 with the support of international NGOs and several Kenyan institutions, it was successful in addressing girls access to education as well as young adults who did not feel comfortable in a school setting (Carr-Hill & Peart, 2005). Support was not adequate to scale-up the successful model although more recently ABE has come to prominence in light of international development goals. ABE was started by Save the Children in Karamoja in Uganda in 1998 (FFE, 2006). ABE was then replicated in Turkana in Kenya in 2004 and more recently in Ethiopia, although the existing Afar Nomadic Literacy Programme that started in 1997 had similar aims (Krätli & Dyer, 2009). ABE is characterised by community participation in both construction and management of the school. Learner-centered teaching is conducted in the local language by a facilitator from the local community where possible. ABE targets children from 7-14 although exclusion of any learners is discouraged. A core aim of ABE is school equivalency, whereby the learners cover the equivalent of grades 1-4 of primary school in three years. Learners are then expected to transition into the formal system. ABE for Karamoja was hailed as a success, particularly in terms of gender parity in comparison to formal education (Carr-Hill & Peart, 2005). By 1999 the two districts involved in the pilot phase of ABE for Karamoja had enrolled 9,265 children, 67 per cent of whom were girls (Ruto *et al.* 2009). However, some authors (Krätli, 2001) have criticised the programme on the grounds that indigenous knowledge is undermined, and tailored education is used to draw pastoralist children into rigid systems of formal education. Issues affecting both ABE for Karamoja and Turkana are lack of appropriately trained facilitators from the local community. This has led to a lack of creative learning methodologies and use of facilitators from non-pastoral

backgrounds (Ngome, 2005). The GoK has started to recognise these alternative schools, although the current definition of a 'school' in the Education Bills (as part of the Children's Act, 2001) makes budgetary allocation difficult.

5.7.3 Quranic Schools

Many pastoralist groups are Muslim and for them, as for the Islamic world more generally, the mosque, *madrasa* or *duksi*[74] are the traditional locations for education. The principle form of instruction concerns reading, writing, memorising and reciting the Qur'an in Arabic (McCaffery *et al.* 2006). Modern *madrasas* have increasingly supplemented purely religious instruction with secular subjects in response to the growing requirement for 'western style' education in the modern world. These modern *madrasas* are generally only found in towns and cities and are run more and more like formal schools. In terms of pastoralist education, boarding *madrasas* do exist but are popular only among the wealthy. The *duksi* represents a mobile form of *madrasa* highly suited to the pastoralist lifestyle. Lessons are held in early morning and evening and pupils are instructed on an individual basis. The community is responsible for collecting a salary for the teacher, which is often paid in livestock. The *duksi* is a Somali institution of learning that has existed for centuries (Carr-Hill & Peart, 2005). *Duksis* are taught by local religious teachers (sometimes called *Imams* or *Maalims*) and learners are normally young boys from five to ten years old. Orma *duksis* are only attended by boys but in the Somali tradition young girls may also attend.

Duksis and formal education are not considered as alternatives but as complementary (Ruto *et al.* 2009). When mobile households are near to settlements, *duksi* teachers and primary school teachers will often coordinate lessons such that children can benefit from both religious and secular education (Carr-Hill & Peart, 2005). The *Comprehensive Education Sector Analysis Report* (GoK/UNICEF, 1999) surmised that 'Quaranic education keeps children away from the benefits of secular

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[74] *'Duksi'* can also be spelt *'dugsi'*. The former is preferred here due to the closer fit with Orma pronunciation of the word.

knowledge'. In the pastoralist context this is probably not accurate as access and appropriateness of formal education presents more of a barrier than constraints associated with religious education. Despite the perception of *duksis* as traditional, there has been a marked expansion since the 1980s (NACECE & Aga Khan Foundation, 1994). This has contributed to the heightened sense of threat perceived by the United States of America in Northeastern, Eastern and Coast Provinces in Kenya. *Duksis* and *madrasas* are perceived by western governments to be a hot-bed of Islamic extremism. As a result the US military's 'hearts and minds' programme has instigated a number of development projects in the Kenya-Somalia border-zone which are used to gather intelligence and reduce the perceived threat of religious radicalization (Bradbury & Kleinman, 2010).

The popularity of *duksi* among Muslim pastoralist communities has led some to suggest that it would be a good model on which to base the provision of mobile schools (MOEST, 2005; Anis, 2008). Some have gone further and suggested that Quranic teachers could be trained to incorporate secular subjects into *duksi* education (FFE, 2006), although Krätli (2000) highlights several potential problems with such a strategy. *Duksi* education requires no shelter and only locally available materials (wood as a slate and charcoal mixed with milk for ink), whereas secular subjects require textbooks and other teaching materials not available locally. Repetition can be taught to many children of different ages but secular subjects require a different set of skills. Teachers would require training in these new subjects if they were willing to teach non-religious subjects at all. To summarise, there is much to be learnt from the success of mobile Quranic schools and their synchrony with the pastoralist way of life. However, due to the specificities of Islamic education, it may not offer a good model on which to base the design of mobile schools, if such an option is viable in the pastoral context.

Different forms of mobile school have been developed across the world as a means of providing basic education to children living in sparsely populated and remote

areas (Lugano and Abdi, 2003). Examples of mobile education come from Iran (Hendershot, 1965; Shahbazi, 2006), Mongolia (Decemberel & Penn, 2006) and Nigeria (Udoh, 1982) among many others. Non-Islamic mobile education has been trialled in Africa since the 1970s. In Kenya mobile schools were introduced in the early 1990s by the Arid Lands Resource Management Project (ALRMP) and were intended to transfer learners into formal primary school after completion of grade 3 in the mobile school. Due to the increasing international and national focus on achievement of EFA and MDG goals on education, there has been renewed interest in alternative education provision. Consequently, mobile schooling is among the ideas that have been 'dusted off' and re-branded as an exciting innovation. UNICEF funded a study trip to Iran for the Ministers of Education from Kenya, Ethiopia and Somalia in 2006 (UNICEF, 2007) so that they could witness Iran's successful mobile schooling system. This was despite the fact that each of the East African delegations had existing successful mobile education pilot projects and small-scale initiatives functioning within their own countries. The failure of East African mobile education is that insufficient funding is in place to adequately resource and train local teachers, rather than a lack of successful models or innovations. As discussed in the previous section, the *duksi* model demonstrates that sufficient aggregations of children can be organised to justify an adequately resourced mobile model, although whether this is the most efficient and cost effective option will be discussed later in the chapter. While mobile schools are an attempt on the part of the state to adapt service provision to the needs of the recipients, they have been swamped with problems (Krätli & Dyer, 2009). These problems will be examined below, with reference to the performance of mobile education in various countries.

5.7.4 Mobile Schools

Apart from a few examples, which will be outlined below, most mobile schooling initiatives are characterised by short-lived success. This initial success gives way to either a steady decline in usage or relatively rapid collapse or de-mobilisation following withdrawal of NGO support or hand over to state control. The tent schools of Iran are the most commonly cited example of the potential of large-scale mobile

schooling (Hendershot, 1965; Shahbazi, 2006). Started in the mid-1950s as part of the Tribal Education Programme, implementation was well funded and there was large-scale training of local teachers in 1957. At its peak 10,000 children were being taught in some 600 tent schools (Carr-Hill & Peart, 2005). Gender parity was low with boys representing 90 percent of learners. One of the key achievements of Iran's tent schools, although unintended, was to educate pastoralist children without compromising their cultural identity (Shahbazi, 2006).

The Wajir Mobile Schools Project (WMSP) (also known as the *Hanuniye* project) in Kenya, represents a much smaller-scale mobile schooling success story. It was started in 1995 and it focuses on Somali pastoralists with whom teachers travel as they migrate in search of pasture and water. Based on the *duksi* model, the project is implemented by the Nomadic Primary Health Care Programme (NPHC), an NGO in Wajir (Aikman & El Haj, 2006). According to a study conducted by Hussein (1999 cited in Carr-Hill & Peart, 2005), by 1999 the WMSP had enrolled 3,148 boys and 2,830 girls which represents almost 50 per cent of the districts primary enrolment. Despite recent problems and subsequent contraction of the WMSP due to the NGO implementer losing funding and floods hitting the area, the rapid uptake on the part of Somali pastoralists clearly demonstrates a demand for this model of education provision.

With the exception of Iran, and some small-scale initiatives in Africa, mobile schools have performed far below expectations (Krätli & Dyer, 2006). This section will look at some illustrative examples of unsuccessful mobile school systems, and outline some common factors which led to their failure.

The Sudanese Ministry of Education developed a strategy in 1994 for nomadic education which resulted in the establishment of 265 mobile schools in 1999. The schools in western Sudan (Darfur and Kurdofan regions) enrolled 11,625 learners of which 68.6 percent were boys (Egemi, 2001). Teachers are recruited locally,

receiving three months training and are paid by the both Government and the community. The schools functioned on the *duksi* model with teachers moving with the community. Since their establishment there has been a steady decline in performance due to the lack of reliability and availability of trained teachers and lack of teaching resources. This has led to worsening gender parity and enrolment. As a result, many of the 265 schools no longer exist, ultimately because of lack of funding and support (Aikman & El Haj, 2006). The limited number of mobile schools that do remain are funded by Oxfam GB and are functioning well.

The community mobile schools of Nigeria are a well-known example of education provision tailored to the needs of pastoralist children. Again, these schools were based on the *duksi* model and taught by teachers from the pastoralist community. Despite the fact that some of these schools operated for many years, Ezemoah (1997) considers that they largely failed. One of the main reasons cited for this failure is the lack of availability and training of local teachers, which led to the use of non-pastoralist teachers who are unaccustomed to a mobile lifestyle. Other factors contributing to the failure of the schools were ineffective administration and monitoring, and lack of teaching resources. Many of these problems are consequences of the lack of adequate funding. The schools still in operation today rarely move and consequently serve the more sedentary members of pastoralist communities and not the target recipients (Aikman & El Haj, 2006).

The ALRMP is funded by the world bank and specifically focuses on Kenya's Northern arid lands. ALRMP in partnership with the MoE has established 55 mobile schools in 6 arid districts (Ruto *et al.* 2008). In Muslim areas the schools were modelled on the *duksi* while elsewhere schools were set up to serve mobile village clusters (*adakars*). Some of these schools have now been operating for well over a decade although many of those that are still in operation are struggling (Aikman & El Haj, 2006). Environmental conditions force pastoral households to migrate far from their home areas which results in an increased requirement for children's

participation in household activities (Lugano & Abdi, 2003). Although these external factors are significant, internal factors such as teacher motivational issues and lack of teaching materials stem from inadequate financial resourcing of the project (Aikman & El Haj, 2006).

Satellite schools, an alternative to the mobile school model, have also achieved some short-lived success. Functioning very much like remote formal primary schools, satellite schools or 'learning centres' are located along a rough orbit of a static formal primary school. Learners are expected to transition to the formal primary school at grade five. The formal school supports the satellite schools with teaching materials, teacher training and administration. The model was very successful in Samburu district in Kenya where satellite or *lchekuti* schools have operated since 1992. Action Aid (a UK based NGO) started to support and expand the project in the mid-1990s. The *lchekuti* schools were successful until Action Aid withdrew support in 2006 after the MoE refused confer official status and incorporate the project into formal state education structures (Ruto *et al.* 2009).

5.7.5 The Problems Associated With The Mobile School Model

In general terms, remoteness, harsh conditions and poor communication and transportation infrastructures make staffing, administration and monitoring of mobile schools very difficult (Krätli & Dyer, 2009). The examples of mobile schools given above all failed for similar reasons. Many initiatives have failed because of lack of adequately trained pastoralist teachers. While this reflects the budgetary constraints on investment in large-scale training of pastoral teachers, this is clearly a pre-requisite for a successful large-scale and sustainable mobile education system. However, training of local teachers is not without problems itself. When pastoralists with few employment options are trained as teachers their employment prospects blossom and they may not choose to pursue a mobile lifestyle when other more comfortable sedentary teaching options are available (Anis, 2008). Another problem with the mobile school model is that even successful schools rarely achieve good rates of transition to formal education (Ruto *et al.* 2009). While this is not seen by

many to be an all-encompassing measure of educational success, it certainly does not constitute equal educational access to that received by sedentary communities.

The efficiency of mobile schools will only ever be satisfactory if significant aggregations of children can be reliably gathered to participate in education. This is a big uncertainty because of the nature of pastoral mobility. Sudden and unpredictable migration, not always together as a community, can leave the teacher with the option of teaching one of a number of small, dispersed groups of children. This fundamental concern is addressed by an alternative provision model discussed in the following section.

5.7.6 Distance Education

The concept of 'open learning' is closely linked with distance education. The complementarity of the two approaches is not disputed although OL is regarded here to have equal relevance to other 'school to child' approaches such as mobile schools. As such, the two concepts have been dealt with separately.

A widely accepted definition of distance education is 'an educational process in which a significant proportion of the teaching is conducted by someone removed in space and/or time from the learner' (Perraton, 1982). With the exception of 'flying schools' in Australia, there is very little experience of primary school education at a distance (Krätli & Dyer, 2009). In light of the fast approaching deadlines for the achievement of international development objectives concerning EFA there has been increased policy interest in distance learning (UNESCO, 2002, 2006) particularly for pastoralist groups (Carr-Hill & Peart, 2005; Krätli & Dyer, 2009). One major factor on the side of expansion of distance education is that transistor radios are now ubiquitous in pastoralists areas (Ezeomah,1997), which was not true at the time of the Jomtien Conference. This does not mean that every pastoralist owns a radio, but every pastoralist can now access a radio. In practise, most large-scale implementation of distance education will involve distribution of radios, but in the context of widespread radio ownership, placing such a piece of technology in the hands of a

child is not as problematic as it once was (in terms of the equipment being appropriated for other purposes). Transmission coverage has also expanded in recent years. Anis (2008) reports that Ethiopia has achieved 90 per cent coverage and Kenya boasts 100 percent coverage although this author experienced several 'dead spots' in Tana River District.

Distance education through radio programmes has been used in several countries, the most well-known and successful example is the education of female pastoralists in the Gobi desert, Mongolia (Krätli, 2000). The project was started by UNESCO and DANIDA and focuses on basic literacy and practical skills. The process utilises radio broadcast, printed materials, and occasional visits from tutors. During the first phase of the project over 15,000 women enrolled from 62 districts (Robinson, 1997). This impressive enrolment was undoubtedly bolstered by the distribution of radios and the focus on adult education. Distance education initiatives that specifically focus on primary education are less common. The Accion Cultural Popular Columbia (ACPO) is one of a growing number of examples of successful distance education projects from Latin America which focuses on primary education. The ACPO took place on a significant scale (Young, 1990), and was highly successful. One of the main reasons cited for its success was the targeting of both children and adults at the same time (Krätli & Dyer, 2009).

Nigeria has the longest history of experimentation with distance education for pastoralists (Aderinoye, 2007). From 1981 radio broadcasts were made with the primary aim of sensitizing pastoralists about the importance of education. This is regarded by Krätli and Dyer (2009) as characteristic of the use of radio as an educational tool. The early broadcasts lacked any real educational content and were inadequately planned and poorly funded, which resulted in low quality content. By 1998, funded by the World Bank, the National Commission for Nomadic Education (NCNE) designed a school-based Interactive Radio Instruction (IRI) programme which was designed to improve the quality of teaching and learning in schools in

pastoralist areas (FFE, 2006). The use of distance education under the IRI model may, therefore, have been effective in raising the standard of education for children with access to primary school, but failed to increase access to education for those children unable to consistently attend school. After the World Bank withdrew funding the Japanese International Co-operation Agency (JICA) took on funding of the IRI programme (FFE, 2006).

Another example of distance education is the Literacy for Advocacy, Rights and Skills (LARS) programme broadcast by the BBC Somali Service. The Africa Educational Trust (AET) in partnership with the BBC World Service Trust launched the Somalia Distance Education Literacy (SOMDEL) programme (the forerunner to LARS) in March 2002 (Krätli & Dyer, 2009). The programme targeted both children and adults and focused on basic literacy, numeracy and life skills. Programmes were broadcast once per week by the BBC Somali Service supported by face to face tutorials and printed materials. Roughly 96 per cent of the 10,000 registered learners (70 per cent of which were female) passed the exam at the end of the first year. By 2007, it was estimated that 43,000 registered learners from Somalia/Somaliland had completed the SOMDEL literacy and basic education courses (Krätli & Dyer, 2009). In 2007 the programme was renamed LARS and continues to be broadcast today.

5.8 Conclusion

This chapter has reviewed the education landscape in Kenya and described the main alternative forms of education provision. The state of educational performance in Kenya's pastoral districts has been characterised and the importance of pastoralist and state perceptions has been emphasised in terms of their role in defining both education participation and provision.

The stark contrast between recent policy rhetoric concerning the inclusion of pastoralists in EFA (in response to looming MDG targets) and the extent of marginalisation of pastoralist communities (in terms of public service provision and

broader development indicators), means that a significant increase in funds available for testing alternative forms of education provision can be expected (Swift, 2010). The next chapter will explore the empirical fieldwork data concerning respondent education and enrolment, with reference to the themes and constraints discussed above.

Chapter Six- A Discussion of Data on Education, Learning and Knowledge among Orma Pastoralists

"My children want to learn but my animals want to move"
Respondent 57

6.1 Introduction

Chapter Five established the current state of education provision to pastoralist communities. It described the poor educational participation of pastoralists in Kenya, and some of the policies, perceptions and barriers which serve to constrain improvements in enrolment and attendance rates. Chapter Five also reviewed a range of alternative provision modalities employed to improve engagement with formal education by pastoralists across the world. The poor state of pastoralist education provision was highlighted in contrast with ambitious international education targets, to which pastoralist populations in Africa present a particular challenge. Building on this analysis, Chapter Six outlines the state of education provision in the study area and some of the methodological considerations specific to obtaining data on education. In presenting the data on enrolment, the chapter focuses on the interpretation of patterns within the data which relate families' wealth and mobility with enrolment patterns. The identification of a highly successful endogenous educational innovation, in the form of community nurseries, also became a focus for

analysis because of its apparent significance in addressing constraints to female enrolment. Indeed, examination of the perceived direct and indirect 'costs' associated with various forms of education provision, and a focus on gender differentiated patterns of enrolment are key themes throughout the chapter. A discussion of the perceived costs and opportunities associated with obtaining the Kenyan Certificate of Primary Education (KCPE), and the way in which formal education is valued by respondents precipitates the development of the Pastoral Livelihood Strategy (PLS) Framework which assists with interpretation and structuring of the data on respondent livelihood strategies. By incorporating the key role of thresholds in defining asset dynamics (as discussed in Chapter Four), the framework presents a simple typology of livelihood strategy 'types' based on broad patterns that emerge from the data. The chapter concludes with a discussion of 'education rights' and the value of informal learning and indigenous knowledge, contrasted with formal education. This discussion forms the basis for concluding reflections on the potential of the proposed Kenyan national distance learning programme to address the key constraints to the enrolment of pastoralist children (particularly girls).

6.2 Orma Education: Background, Context and Methods

The secondary data on the history of education provision in Tana River District tallies with Orma recollections of the almost total lack of schools outside of Hola and Garsen (the district capital and largest town respectively) even into the 1980s. As discussed in Chapter Three, the Orma presented a less promising prospect to missionary educators compared with many other pastoralist groups because of their adoption of Islam between 1920 and 1940 (Ensminger, 1992). This was compounded by their political isolation in comparison with other pastoralist groups (in part due to the *Shifta* War). Many respondents recounted not knowing the meaning of the word 'school', when their first children were born. The first school to open in the study area was Tiltila Primary in 1988. The district education statistics reviewed in Chapter Five clearly show the consequences of the lack of education services. The result, in terms of enrolment figures, may in fact be an overestimate due to the ethnic

composition of the district, as compared with other pastoral districts in Kenya. The presence of a large, well-educated Pokomo population who cultivate along the banks of Tana River, severely skew data on education enrolment in the district when compared with districts such as Northeastern, Turkana, Wajir and Mandera which are more ethnically homogenous or where pastoralists form a big majority (Carr-Hill, 2006). If district level data could be disaggregated for pastoralists, a more accurate comparison of development indices for pastoral districts could be made.

6.2.1 Methodological Issues

The education data set, on which all of the analysis in this chapter is based, is shaped by both practical limitations, and strategic decisions concerning the thematic balance of interviews. Methodological limitations relate to sampling, strategic bias, translation and other general issues that have been covered in Chapter Three. There are, however, particular methodological issues specific to the education dataset that require further explanation here. Establishing education histories for large numbers of offspring is time consuming, especially when information must be crosschecked with the female head of household for accuracy. Due to concerns about thematic balance, limitations were placed on the time for eliciting education data.

While interviews generally lasted for between half an hour and forty-five minutes, some interviews were abruptly terminated after 10 minutes while others lasted for many hours covering the broadest possible themes. In some cases, very informal interviews/conversations would be conducted over the course of a days herding or into the night chewing *miraa*. Generally, there was a perceptible point at which a respondents enthusiasm waned and I found that the more conversational the interview, the longer I could maintain respondent enthusiasm. Of all the themes discussed in interviews, education histories of children was the biggest ‘turn-off’. It required straining the memory, sometimes even to remember how many children they had (understandable with as many as thirty children per respondent). The process also took a long time and required an extended ‘dry’ interaction.

During the course of the fieldwork, it emerged that use of the term ‘school-age’ by respondents deviated significantly from the official definition (6-13 years) for primary education. Respondents did not necessarily regard 6-9 year old children as ‘school-age’. Such context specific perceptions of ‘school-age’ may well have led to an overestimate of enrolment in the study data. By excluding children from 6-9 years of age the number of school-age children is reduced and enrolment figures are artificially inflated. The omission of a proper definition of terms with respondents must be regarded as a methodological error, and certainly reduces the reliability of the data on current enrolment. The error was identified and corrected after one third of the interviews had been completed. The data on current enrolment is regarded as a useful guide although a more comprehensive study is recommended to improve reliability. It is unlikely that problems of definition affected all of the initial interviews and as such the data is regarded as broadly accurate. With unlimited interview time to devote to education, it would have been preferable to define duration of enrolment and other criteria discussed below. Current enrolment rates are useful for comparative purposes and to establish enrolment trends over-time but attendance and completion rates give a clearer picture of overall education participation.

The effects of seasonal, climatic, economic and political variation have the potential to skew enrolment data. If data are collected during a period of relatively abundant rainfall, enrolment would be expected to be unusually high due to a sustained reduction of household mobility. Conversely, unseasonal or extended dry periods may decrease apparent enrolment rates. By recording data for parental enrolment decisions over-time, the effects of seasonal, climatic, economic and political variations are reduced. While this can mask potentially interesting trends and covariant relationships between enrolment and other factors, it does give a reliable picture of overall education enrolment.

Several desirable quantitative data are missing from the study data set. These include: information on drop-out levels; weekly contact hours; and journey time to school. While there is a considerable amount of qualitative data on these issues (which will be discussed later in the chapter), it would be preferable to have a quantitative data set on these important elements of education. Other minor problems with the data presented in this chapter concern analysis of data based on wealth and mobility categories. These categories are fluid over-time although, as discussed in Chapter Three, several mitigating factors serve to stabilise wealth and mobility categories (subject to data being based on longer-term family wealth and mobility statuses).

The education data that was collected is considered reliable despite minor problems of category definition. Due to the thematic balance employed in respondent interviews, the resulting data set covers a full-range of themes rather than focusing on just one aspect of Orma livelihoods. As discussed above, this left certain areas of respondents' experiences of education unquantified but facilitated data collection on other themes in what was often a time-limited interview situation. Such a thematic balance was deemed desirable for a study with the aim of illuminating the full-range of issues affecting Orma livelihoods.

All study data presented in this chapter concerning enrolment rates refer to gross enrolment[75]. In recognition that local conceptions of 'school-age' children differs from the official definition, the gross enrolment rate was felt to be a more representative measure of attitudes towards formal education. While this compromises the comparability of the data to a certain degree, it was not considered appropriate to judge Orma enrolment strategies according to an externally prescribed measure of educational progression, in a context in which sending a 6 year old child on a long unaccompanied walk is not considered safe. Despite the inclusion of over-

[75] The gross enrolment rate (GER) can be contrasted with the net enrolment rate (NER). NER = Enrolled children in the official school age group / total number of children in the official school age group. GER = Enrolled children of all ages / total number of children in the official school age group.

age children in the enrolment figures, the occurrence of children 14 years and above enrolled in primary school was extremely rare.

6.2.2 Existing Education Provision In The Study Area

In the study area, Tiltila, Waldena and Kalalani have primary schools. Tiltila primary is certainly the best resourced in terms of school buildings, equipment, and teaching staff, although teachers routinely disappear for one or sometimes two weeks per month to collect their pay in Hola (respondents asserted that teachers use this as an excuse to visit their families elsewhere). The school building cannot accommodate all the students, and textbooks are in short supply. Like Tiltila, Waldena primary is a concrete structure with desks and benches, although it has not expanded since the 1980s (when it was built), such that its capacity is now completely inadequate. During the fieldwork, there were no Government teachers in either Waldena or Kalalani primary schools. In the case of Waldena, the District Commissioner (DC) had recently promised a replacement teacher for one who had left months before. In the interim, parents had hired private teachers although they acknowledged the poor standard of teaching and inadequate ratio of students to teachers. In contrast, Kalalani primary had never had any government teachers despite having been opened by the District Commissioner of Tana River District in early 2008. Respondents reported that a government teacher had arrived but then left immediately vowing only to return when the community had built him a concrete house. Considering the school itself is a timber and mud construction and there are no concrete buildings in Kalalani, the teacher's request was considered to be unreasonable by the community. A private teacher has been hired but only teaches up to standard three. Students are forced to either repeat years, or transfer to Waldena which is a 8 hour walk. While Government teachers are provided at Tiltila primary (along with one teacher paid for by the African Inland Church (AIC)), parents are still required to contribute a monthly amount to pay the cook and buy firewood in order to prepare the World Food Programme (WFP) 'Food for Schools' meals, in additional to a fee for the end of year exams.

There is also a WFP 'Food for Schools' programme in Waldena and Kalalani, although the teacher and elders conspire to sell the food. According to many respondents, WFP food is routinely misappropriated. One respondent in Kalalani explained the situation.

> *"There is food brought by the Government and it is sold- they make the excuse that this money goes to help the children of parents too poor. The money just goes to the teacher on top of pay and elders take the food at a cheap price. Food can be sold to anyone with money at a cheap price- maybe someone who has a wedding and can buy all. Money is split between teacher and elders"*
>
> Respondent 141 (medium wealth)

6.2.3 Community Nursery Schools

Orma community nursery schools are a relatively recent innovation. They are organised and funded by groups of parents who have settled together on a temporary or more permanent basis. Children spend two years in nursery school (five, six, and seven year olds form the majority), they are taught largely as one class although teachers reported assigning distinct learning goals to first and second year students. Teachers are typically Orma primary school leavers holding the KCPE. Sometimes semi-permanent structures are built and sometimes classes are taught under shade trees. The nurseries can move as families migrate, lessons are taught in Kiorma and are flexible and structured to fit with pastoral livelihoods. There are nurseries in Kalalani, Waldena, Haboye/Kotu, El Watcho, Doke, and Tiltila, and two new nurseries were in the process of being established in Anabu and Ongola during the fieldwork.

6.3 Characterising Orma Education

The following section analyses the fieldwork data on education. An examination of factors influencing the decision to enrol children in school is undertaken utilising both quantitative and qualitative fieldwork data. The rationale for focusing on school enrolment and withdrawal decisions is based on the hypothesis that to improve the provision of education services in Kenya's pastoral districts, the barriers to enrolment as perceived by the pastoralists themselves must be understood. The factors affecting

enrolment decisions are addressed in three parts: the ability to enrol; the quality/ culture of education; and the viability of the production system/ perception of the future. Before looking at the specific factors influencing enrolment decisions, this section outlines some of the overall research findings.

The data presented in this chapter are based on 144 interviews with Orma pastoralists. From this total, 122 respondents were able to provide sufficiently detailed information on the education of their children for the purposes of quantitative data analysis. This sub-group had a total of 1027 children of which 367 were primary school age[76] at the time of the interviews. Of these children, 28.2 percent of females and 43.5 percent of males were enrolled in primary school. The overall gross enrolment was 36.2 percent. The vast majority of respondents were male due to the cultural and practical constraints to interviewing women that were discussed in Chapter Three. In many cases, however, wives were consulted to verify information pertaining to children. Parental education levels were low, with 6 percent of female head of households (1st wives) educated (for an average of 3 years), and 28 percent of male head of households educated (for an average of 4.6 years). None of the respondents had attended secondary school.

Enrolment figures only reveal one side of participation in education. As the secondary data sources outlined in Chapter Five show, the completion rates in Tana River District are so low that even the meager enrolment figures described above, give an unduly optimistic picture of actual educational participation. Based on interviews with young men who had recently left primary education, and with fathers who had recently withdrawn children from school, it seems that a very small proportion of Orma children (particularly female) attain the KCPE. Typically, male children continue education until they are required to work, either for their father, a relative, or for a more wealthy herd owner. Because of the rules on compulsory primary enrolment in Kenya, their withdrawal is often described by their parents as

[76] Notwithstanding the problems of defining 'school-age' discussed above.

the child ‘escaping’ or ‘running-away’ from the school. The parents are thus absolved of blame and avoid retribution from the local chief or sub-chief. Penalties for withdrawal of children seemed to be administered in a haphazard manner with some families pursued to neighbouring locations while the vast majority of families are not reprimanded in any way.

A common situation for females is that of being enroled in primary school at 9 or 10 years of age and then being withdrawn to prepare for marriage or help at home after only 3 or 4 years of education. This represents a particularly low level of engagement with education considering that currently only 28.2 percent of female children are ever enroled. The situation does appear to be improving with the introduction of an increasing number of community nursery schools. Enrolment of female children into community nursery schools can significantly extend their participation in education prior to withdrawal for marriage. Based on the fieldwork data, this would extend a female’s engagement with education by 2 years while also improving attainment in primary school. While primary education is compulsory in Kenya, withdrawal for marriage is considered legitimate. Table 6.1 presents the data on gross enrolment rate for community nursery schools. Issues surrounding the late enrolment of girls and their resultant inability to complete primary education by the time they are required to marry, will be discussed in more depth later in the chapter.

Table 6.1 Gross Enrolment Rates for Community Nursery Schools (n =101)

	Nursery Age	Enrolment Rate
Males	53	52.8
Females	41	46.3
Overall	94	50

Secondary enrolment was far lower than primary with only 13 children having attended from the total of 619 respondent off-spring over 14 years of age. All children who attended secondary school were male. This represents 4.2 percent of

male children or 2.1 percent of children overall. It was not possible to establish the current gross enrolment for secondary school as the secondary school-age population proved too difficult to define accurately.

6.3.1 Tana River District And Secondary Data

The fieldwork data on gender parity in primary and secondary schools calls into question the Government of Kenya's (GoK) report to the World Education Forum in 1999 which announced the achievement of gender parity in primary and secondary education (GoK and UNICEF, 1999). This serves to illustrate the point made in the previous chapter concerning the role of national statistics in obscuring considerable inequality at the margins.

Districts in northern Kenya with predominantly Muslim inhabitants have performed particularly poorly according to educational participation indicators (Ruto *et al.* 2009). It has been suggested by some authors that there is a particular conflict between the Islamic faith and formal western-type education, which has led to low participation rates (*cf.* Carr-Hill, 2006). Highlighting the needs of specific ethnic groups may play an important role in adapting provision of education services. It must also be borne in mind however, when considering educational participation in the former Northern Frontier District (NFD), that predominantly Islamic inhabited northern districts have had least investment in both infrastructure and services due to factors discussed in Chapter Three (*shifta* war etc), which may serve to explain poor educational performance. Some of the barriers to participation specific to Muslim communities, and the success of the parallel system of *madrasa/ duksi* schools will be discussed in more detail later in the chapter.

From secondary data sources it can be established that drop-out, repetition and transition rates are worse in pastoral dominated districts than the national average (Carr-Hill, 2006). Specifically, Tana River District rates near the bottom of the list on several different education criteria. Based on 2007 data from the Kenyan Ministry of Education (MoE) quoted in Ruto *et al.* (2009), Turkana and Tana River feature in the

worst ten districts countrywide for primary drop-out rates with 18.2 percent and 15.1 percent respectively. The highest rate of female primary drop-out in the country (19.9 percent) was in Turkana District followed by Tana River (18.1 percent). In terms of survival rate to primary grade five, the worst six districts nationally were northern districts. The worst being Garissa (32.8 percent), followed by Ijara (33.6 percent) and Tana River (18.1 percent). For primary completion rates, nine of the ten worst districts nationally were northern districts. In Wajir, only 24.4 percent (14.1 girls, 32.9 boys) completed their primary school cycle in 2007, followed by Samburu and Tana River with 29.8 percent (41.7 boys and 19.0 girls) and 32.4 percent (42.3 boys, 22.7 girls) respectively (Ruto *et al.* 2009).

6.3.2 Changing Attitudes To Education

In order to get some quantified measurement of trends in education enrolment, the fieldwork data was disaggregated for currently enrolled students (367 school-age children) and previously enrolled students who have now left education, referred to as 'historical data' (437 children over primary school age). In the absence of any reliable secondary data on historical enrolment rates among study communities, table 6.2 is intended to provide a general impression of the rate of change in enrolment levels across time. Due to the broadly defined sample (multiple generations) described by the historical education data, table 6.2 does not provide a basis for accurately assessing enrolment trends over-time. However, it is clear that the broad trend is towards increasing enrolment for both genders, with an emphasis on increasing participation among female children. The historical enrolment rate for female children tallies with the education level of respondents' first wives, discussed above (6.1 percent).

Table 6.2 A comparison of historical enrolment and current gross enrolment rates

	Historical Enrolment	Current Enrolment
Males	21.5	43.5
Females	6.9	28.2
Overall	14.6	36.2

This data fits with general comments made by respondents in interviews concerning the growing recognition among the Orma about the importance of education and the increasing acceptance of female education as beneficial to the family.

> *"I regret not sending my daughters to school- now they cannot help themselves or the family"*
>
> Respondent 1 (low wealth)

While increases in gender parity are clearly positive, the question as to whether overall increases in enrolment reflect positive trends among pastoral communities in general, is open to debate. Krätli and Dyer (2009) highlight a scenario in which increasing enrolment may be symptomatic of more deep-seated problems with pastoral livelihoods. In examining parents' decisions concerning whether to educate their children, such debates will be examined more closely in the following section, with reference to the fieldwork data.

6.4 The Ability to Enrol Children

A parent's ability to send their children to school is considered here to refer not only to the direct costs associated with schooling. The knock-on effects of enrolment on the production system, and the opportunity cost of lost family labour, are also an important part of parental perceptions of their ability to enrol their child. By incorporating all of the factors and trade-offs considered by Orma pastoralists in making this key livelihood decision, we are more likely to gain insight into the dynamic relationship between livelihood components, which defines the barriers to a child's enrolment in school.

6.4.1 Direct Costs

The direct costs associated with attending school include: the cost of school fees (attendance and exam fees); uniform; equipment (exercise books, stationery etc); and transportation. Indirect costs refer to the secondary impacts of a child's enrolment, such as the diminished supply of labour to the production system, and the constraint of household mobility, which both potentially reduce production. There are also factors unrelated to either direct or indirect costs which reduce a parents ability to enrol their child in school. Insecurity can disrupt participation in school and is relatively common in northern and eastern Kenya, particularly when problems erupt in Somalia (Leggett, 2001), or when prolonged drought leads to conflict over grazing territories. When problems of insecurity occur, parents are unlikely to release children for long unaccompanied walks to school and may be forced to flee the area altogether (Carr-Hill & Peart, 2005). Several respondents reported that they themselves were withdrawn from school due to the outbreak of war between the Orma and the Kambas in 1976. Before the clashes some respondents had been attending school in Kambaland due to the absence of schools in Ormaland at that time.

Fieldwork data on the enrolment rates of different wealth categories sheds some light on the role of direct school costs in restricting the ability of parents to enrol their children in school. The expected relationship between wealth and school enrolment is that more wealthy parents are better able to pay for education and that this would be reflected in higher enrolment figures compared to less wealthy parents. Table 6.3 demonstrates that the expected relationship does not exist. Households in the low and medium wealth categories have similar enrolment rates whereas households in the high wealth category have a significantly lower enrolment rate for male children and almost half the enrolment rate for female children.

Table 6.3 Gross Primary Enrolment Rates and Wealth Categories

Wealth Category	n	School Age Children	Male Enrolment	Female Enrolment	Overall Enrolment
High	27	112	37.0	17.2	26.8
Medium	40	124	46.4	32.7	40.7
Low	53	131	45.7	34.4	40.5

The data presented in Chapter Four demonstrated that there is a strong positive correlation between wealth and mobility status. This relationship makes it necessary to control for mobility status to get a clearer picture of the effect of wealth on enrolment. Table 6.4 presents data for settled families which illustrates that the expected relationship between wealth and enrolment is reversed. High wealth families enrol fewer children than both low and medium wealth families. Table 6.5 demonstrates a similar relationship for mobile families.

Table 6.4 Gross Primary Enrolment Rates for Settled Families by Wealth Category

Wealth Category	n	Male Enrolment	Female Enrolment	Overall Enrolment
High	7	52.9	29.4	41.2
Medium	16	69.6	46.7	60.5
Low	36	50.0	37.2	44.2

Table 6.5 Gross Primary Enrolment Rates for Mobile Families by Wealth Category

Wealth Category	n	Male Enrolment	Female Enrolment	Overall Enrolment
High	10	25.0	25.0	25.0
Medium	15	20.0	31.8	27.0
Low	15	30.8	30.8	30.8

By comparing tables 6.4 and 6.5, it is apparent that settlement is positively correlated with elevated enrolment. This suggests that factors associated with mobility are

limiting parents' ability to enrol their children in school. Distance from the school and the higher requirements for household labour associated with both mobility and higher family wealth, are key factors in reducing the ability of parents to enrol their children.

Sending children to school when the journey may take two or three hours, is often not regarded as safe, particularly for female children. The direct cost of schooling is also a contributing factor but cannot be regarded as the principal barrier for mobile households. For settled households, direct costs play a more important role (which may explain the gulf between low and medium wealth enrolment in table 6.4). For community nurseries, which are funded exclusively by parents, fees can prohibit enrolment of children from low and medium wealth families. As discussed in section 6.2.2, some primary schools were also partially or completely funded by parents at the time of the study. Respondents frequently cited school costs as their biggest household expenditure after food. Although secondary school fees were officially waived in 2008, the effects of this have yet to take effect (Otieno & Colclough, 2009). In comparison with nursery and primary school, secondary school fees are considerable (KSh 10,265 per annum). Only 13 children among the study sample had attended or were attending secondary school. Of these, 3 were from high wealth households, 7 were from medium wealth households, and 3 were from low wealth households (although 2 of these students were sponsored by AIC). The parallel system of *duksis* or *madrasas* are provided free of charge, which can be a significant factor for low wealth households. While the absence of both fees and equipment costs does enhance the appeal of Islamic education, the mobile nature of such schools and their harmonisation with the rhythms and culture of Orma pastoral life may be equally important to parents.

6.4.2 Indirect Costs

Indirect costs of schooling can be grouped into three categories: accommodation for school children; reduced production due to curtailment of mobility; and reduced production due loss of a child's contribution to the household economy.

Finding School Accommodation

For families who are mobile for significant periods of the year, regular attendance at school is only possible by arranging accommodation for children closer to the school, typically in the home of a relative. Sending a child to live nearer the *bula* (settlement) usually requires payment to cover the child's food and clothing, and is frequently regarded as inappropriate for female children.

> *"I don't send children to school as I don't know where I can leave them behind"*
>
> Respondent 9 (low wealth)

> *"I have sent my sons to live with Hasan* (brother) *in Tiltila to learn at the school"*
>
> Respondent 23 (low wealth)

> *"I haven't sent any children to school, my eldest is 8 years old. I have no-one to look after the herd so he* [eldest son] *is herding. If I want to send children to the school, I cannot- I have no relatives in Waldena"*
>
> Respondent 103 (high wealth)

Reduced Production as a Result of Mobility Curtailment

Reduced household mobility leads to lower production levels, this results in the substitution of subsistence production for purchased food (or food aid). These indirect costs have the effect of increasing the price of education which discourages enrolment.

> *"When the dry season comes you are not supposed to stay in one place. But now because of school children, even if it is dry you cannot move. If you are not moving with your heads where there is enough grass you cannot drink as much milk as you want. So we are buying food from the shops- before we didn't have that expense"*
>
> Respondent 52 (low wealth)

For families composed of two or more households, settlement of one of the households can facilitate access to education for some of their children. Such a practise is referred to here as 'household splitting'.

> *"Before the school I used to move with both houses- now I move with only one house"*
>
> Respondent 139 (high wealth)

> *"If I had more heads I could marry another lady and have one house for school and one for the heads* (cattle)*. A life of moving is better"*
>
> Respondent 64 (low wealth)

While there are additional benefits associated with settling one household, such as building social capital and diversifying income generating activities, there are also considerable costs to production. Many of the costs to production associated with a reduction in mobility have already been discussed in Chapter Four and will not be repeated here. The quote below illustrates that curtailment of mobility does not necessarily imply household splitting or sedentarisation, there are various degrees to which household mobility may be constrained by inappropriate service provision.

> *"We arrived in Golecha yesterday, before that my house was in Komoli. The children have missed a week of school. When school breaks we will move again"*
>
> Respondent 54 (high wealth)

As discussed above, the relationship between mobility and enrolment (see tables 6.6, 6.7, 6.8 below) broadly follows the expected pattern. There are certain anomalies in the data, such as the very low enrolment of female children from split high wealth families. Due to the necessity of disaggregating data simultaneously by wealth and mobility, sample sizes are greatly reduced. Explanations for data anomalies are thus highly speculative. It does however appear that household splitting results in increased enrolment of male children but a decrease for female children. While most extreme for high wealth households, this phenomenon occurs for all wealth

categories. It may be speculated that splitting households results in more work for female children because tasks have to be duplicated in both households. There would be comparatively few herding duties for male children in the settled household. This theory is supported by data on Orma pastoralists from Ensminger (1984) which shows that female workload can increase by up to thirteen times with settlement. The uniformly lower female enrolment when split households are compared with mobile households requires further research in order to interpret confidently.

Table 6.6 Mobility Category and Gross Primary Enrolment for High Wealth Households

Mobility Category	n	Percentage of Wealth Category	Gross Enrolment Rate		
			Male	Female	Overall
Mobile	10	37.0	25.0	25.0	25.0
Split	10	37.0	32.0	4.0	18.0
Settled	7	25.9	52.9	29.4	41.2

Table 6.7 Mobility Category and Gross Primary Enrolment for Medium Wealth Households

Mobility Category	n	Percentage of Wealth Category	Gross Enrolment Rate		
			Male	Female	Overall
Mobile	15	37.5	20.0	31.8	27.0
Split	9	22.5	41.9	22.2	34.7
Settled	16	40.0	69.6	46.7	60.5

Table 6.8 Mobility Category and Gross Primary Enrolment for Low Wealth Households

Mobility Category	n	Percentage of Wealth Category	Gross Enrolment Rate		
			Male	Female	Overall
Mobile	15	28.3	30.8	30.8	30.8
Split	2	3.8	40.0	20.0	30.0
Settled	36	67.9	50.0	37.2	44.2

Community Nursery Schools

In contrast to enrolment in state primary school, enrolment of children from mobile families in community nurseries, does not result in a significant decline in household mobility or household labour supply (and thus, a decline in production). Barriers to enrolment and attendance associated with remoteness from schools (long walks, insecurity etc) and the rigid timing of lessons and terms, are also considerably reduced. It is not unusual for Orma children to walk for 2 or more hours to get to school. As a result, parents sometimes place children with settled relatives near the school to reduce the dangers and fatigue associated with the journey. This practise typically improves the enrolment of male children only. Respondents expressed a particular reluctance to send female children on long unaccompanied walks, or to live apart from their mother's supervision in 'town'. This may explain, to some degree, the increases in female enrolment associated with the community nursery model. As will be discussed later in the chapter, this has important implications for the design of alternative forms of primary education provision.

Community nurseries are not always able to migrate with families (sometimes due to an insufficient aggregation of children). Crucially, however, when families do converge in one location, nurseries are able to re-establish themselves quickly. Community nurseries often remain remote from larger settlements, such that families' herds have sufficient grazing nearby to maintain production. A family's

ability to feed from its livestock, whenever possible, is an important factor in protecting asset holdings above key thresholds discussed in Chapter Four.

The data presented in tables 6.9 and 6.10 demonstrate the positive consequences of community nursery schools on enrolment. Gross primary enrolment rates of 26.8, 40.7 and 40.5 percent for high, medium, and low wealth categories, are significantly lower than equivalent figures for nursery enrolment (32.1 , 61.1, 53.6). The increase of overall female participation is particularly marked. A female primary enrolment rate of 28.2 percent, compares to 46.3 percent female nursery enrolment. The higher gross enrolment rates for community nursery schools may actually be an underestimate, as nurseries are a relatively new innovation and coverage of the study area was patchy. While there were seven community nurseries functioning in the research area and two new ones in the process of being established, not all respondents had access to a community nursery at the time of the study.

Table 6.9 Community Nursery Gross Enrolment Rates by Wealth Category

Wealth Category	n	Nursery School Age	Male Enrolment	Female Enrolment	Overall Enrolment
High	27	28	38.5	26.7	32.1
Medium	35	33	58.8	62.5	60.6
Low	39	34	68.4	33.3	52.9

Table 6.10 Community Nursery Gross Enrolment and Mobility Status

Mobility Status	n	Nursery School Age	Male Enrolment	Female Enrolment	Overall Enrolment
Mobile	38	30	30.8	35.3	33.3
Split	19	26	69.2	46.2	57.7
Settled	44	38	71.4	41.2	57.9

Reduced Production as a Result of the Loss of a Child's Contribution to the Household Economy

The final source of indirect costs associated with a parents ability to enrol their children in school is the value of reduced production or increased costs as a result of the loss of a child's contribution to the household economy. As discussed above, wealthier families with bigger herds are likely to have higher labour demands which can translate into lower school enrolment (Krätli, 2000). Similarly, wealthier families are more likely to have cattle herds which require proportionately more labour than smallstock herds (Heffernan *et al.* 2001).

"The one who has more, has to do more work"

Respondent 101

When respondents were asked about the reasons for non-enrolment of 'school-age' children, the top reason cited for male children was herding duties (69.3 percent of respondents) while for female children the most common reason was 'helping at home' (40.5 percent), which comprised a wide range of activities: assisting mother; herding smallstock; preparing *kurros* (solid wood milk storage containers)*;* collecting firewood; and fetching water. See tables 6.11 and 6.12 for a complete list of responses.

Table 6.11 Reasons Cited for Non-Enrolment of Male School-Age Children (n=78)

Reason	Percent of Respondents
Herding	69.3%
Mobility	21.8%
School Expense	6.9%
Low Parental Priority	2.0%

Table 6.12 Reasons Cited for Non-Enrolment of Female School-Age Children (n=82)

Reason	Percent of Respondents
Assisting at Home	40.5
Marriage	27.6
Mobility	21.6
School Expense	7.8
Low Parental Priority	1.7
Child Sickness	0.9

Children's contribution to the household economy presents significant barriers to participation in schooling. Similar findings were presented by Heffernan *et al.* (2001) based on research with 30 pastoralist communities in three districts (Samburu, Baringo and Garissa) in Kenya. Enrolment of children in school was cited as the main reason for livestock-related labour shortages. Labour for livestock herding was noted to be a problem among 57 percent of respondent households. The quotes below illustrate the same trend among Orma pastoralists.

> *"I have nine sons, four are married, there are two makalas* (young men) *herding the urane* (cattle camp)*, three are young but one of them is attending the school. I didn't take the older boys to school because I was without big herds- they had to work. The other younger ones will not go to the school- I need them to herd goats"*
>
> Respondent 96 (high wealth)

> *"I have six sons and two daughters. Two sons attended the school, one is still there, one is married. The others didn't go because I was not 'abled'* [wealthy enough] *so they had to help provide for the family, my sons are herding for others"*
>
> Respondent 85 (medium wealth)

"I sent two sons to the school. They have left now- they refused to go any further, now they herd for someone, I get one cow per year for each boy"

Respondent 62 (low wealth)

Opportunity Cost of Enrolment

The opportunity cost of enroling a son who would otherwise be herding is one cow per year. This is the cost of hired herders, although hiring herders is only viable for relatively well-off families. If the family cannot afford to pay a herder, the father may take over herding himself or put his herd with a relative or in a 'cattle camp' (in either case the milk will not be available to the family). A son is not paid directly for herding for his father but indirectly this can be considered as paid work because his father will pay his dowry and he will eventually inherit some or all of the herd. Likewise when a son herds for a more wealthy herd owner, his 'wages' will go to his father but will ultimately be spent on his dowry or inherited as part of his father's herd.

The contribution of a daughter to the household economy is harder to value (in economic terms). The work of females is no less important to the household economy than the work of males but is not believed to have the same value or prestige attached to it. A daughter's work generally consists of herding and milking smallstock, preparing *kurros* (milk containers), fetching water, preparing food, constructing houses, gathering building materials, collecting firewood, child care, washing clothing and cleaning the household and *boma*. Where male children can regard their work as paid indirectly through payment of their dowry and future inheritance, female children's work is not remunerated except indirectly through provision of food and shelter.

If it is assumed that the direct value of male and female work is roughly equivalent, the total opportunity cost of enrolment in school, in terms of a child's contribution to the household economy, would depend on the duration of enrolment. If we focus on annual opportunity cost, there are several factors which complicate the presumed

equivalence between male and female children. The first such factor is the demographic structure of the family. The opportunity cost of enrolment for any child in any given year, will be raised by shortages of male or female children. Due to the nature of female contributions to the household economy, there are diminishing returns to increases in female numbers (as they cannot be hired out in the same way that males can). The degree to which this affects enrolment is unknown, although it can be hypothesised that a greater proportion of female off-spring would lead to elevated enrolment of female children.

Another factor which raises the opportunity cost of enrolment concerns living expenses. Male children who are herding cattle (either for their father or for a wealthy herd owner) do not require many living expenses. They are often in cattle camps and feed only on milk and tea (occasionally meat or blood), and return home infrequently. If they are enrolled in school they must be fed purchased food, which raises the opportunity cost of male enrolment. In contrast, daughters are at home regardless of enrolment such that living costs are not a consideration in educating female children.

Since young women reside away from their natal home following marriage, the benefits of education accrue to their husband's family. However, the expense of female schooling, represented by lost labour in addition to school fees and constraint to mobility, is borne by a girl's parents (Fratkin & Roth, 2005). This has the effect of increasing the opportunity cost of female enrolment. Education of females is also regarded as a poor investment because there is little chance of them completing primary school and going on to find employment. Females are expected to marry at 13-14 years of age and then bear children. Educating females can also reduce their choice of potential suitors as Orma culture dictates that a man should be more educated than his wife for a successful marriage (Roth, 1991). Comments made by numerous respondents implied that this practise is changing such that some now regard having an educated wife as prestigious. Educated wives are considered more

able to initiate supplementary income generating activities (for example, selling milk, which requires numeracy skills). Likewise, parents are starting to regard the education of females as an increasingly positive investment in light of the increasing prevalence of divorce in Orma culture. Molteno *et al*. (2000) notes similar trends among Somali pastoralists in Ethiopia. Despite these more recent trends, the opportunity cost of enroling females in school is significantly higher than for males, particularly due to marriage customs, which dramatically reduce the potential returns from investment in female education.

In light of the discussion on opportunity costs of a child's enrolment in school, it must be acknowledged that some of the gains in enrolment highlighted in this chapter for community nursery schools may be partly explained by the comparatively low opportunity cost of a 'nursery-age' child's labour. To some degree this means that comparisons between primary and nursery school enrolment rates are biased. However, this fact does not jeopardise the reduction of barriers to enrolment associated with specific components of the community nursery model, which play a key role in raising enrolment rates particularly for female children. It will only be possible to disaggregate the effects of the community model on enrolment once elements of the community model have been incorporated into alternative models of primary education. Although secondary level education is extremely rare amongst the Orma who participated in this study, it is worth mentioning that opportunity cost of enrolment in secondary school once the KCPE has been attained is relatively low as it is unlikely that such a student would return to herding and unlikely (based on respondent testimony) to be able to secure employment. If subsidised places were available, secondary education offers a rare opportunity for Orma families to benefit from rural-urban linkages and remittances in the future.

Overall, while the opportunity cost of school enrolment is higher for females than for males, mainly due to the indirect factors described above, this is not the whole story in terms of a parent's decision, or their ability to enrol. The following sections will

look at how cultural factors and broader livelihood strategies also influence parental decisions.

6.5 The Quality, Culture and Value of Formal School-Based Education

An important aspect of the decision to enrol children in school is the perceived quality and value of the education on offer. The compatibility of the school environment with the culture and traditions of the community is also a significant consideration. High student to teacher ratios, high staff turnover, lack of teaching materials and low teacher motivation in Kenya's arid pastoral districts (Krätli, 2000; Arero, 2005; Ruto *et al.* 2009) are all factors reducing both the quality of education and parental incentives to enrol their children. In 2007, primary schools in arid districts had the worst teacher to student ratio in Kenya, despite the low enrolment rate. Arid districts had an average of one teacher for 53.4 students, against 1:46 for semi-arid, and 1:44 for agricultural districts (Ruto *et al.* 2009).

As a result of these factors, Kenya's northern pastoral districts produce some of the worst KCPE exam results. An analysis of national results indicates significantly lower performance for arid districts in both 2007 and 2008. Figures for 2008 show that Garissa, Moyale and Tana River were the worst performing pastoral districts with raw means (before standardisation) of 160, 168 and 169 respectively (out of 370) (Ruto *et al.* 2009). The national average that year was 189. The performance of female children in these districts was significantly lower than the national average over this period. Taken in combination with the fieldwork data on Orma enrolment rates, these KCPE performance figures indicate that the quality of education provision and the appropriateness of the current primary school model in Tana River and more widely in Kenya's arid districts is woefully inadequate.

6.5.1 Teachers

Teachers from non-pastoral backgrounds find living conditions in arid districts very difficult (Krätli, 2000; FFE, 2006; Ruto *et al.* 2009). They are often separated from their families and have to travel long distances with no public transport to collect

wages. Teachers often feel isolated by their different linguistic and religious background and have limited access to teaching resources. This situation results in high teacher turn-over and high levels of absenteeism (Molteno *et al.* 2000; Krätli, 2001).

> *"Even for primary there is not enough teachers so the parents pay. There is no learning- they can spent a week just playing games when there is no teacher"*
>
> Respondent 121 (low wealth)

Despite the introduction of the 'hardship allowance' for teachers working in arid districts in 2001 (Ruto *et al.* 2009), teachers from Orma schools complained that payment is erratic and not sufficient to off-set the costs associated with living in an arid area. It is commonly recognised that where possible, teachers should be from the same pastoral background as the students (Carr-Hill & Peart, 2005). In Tana River, like most arid districts, the majority of school teachers and government officers are not from pastoralist backgrounds (Krätli, 2000). In the research area, there were no Orma employed as government teachers. Almost all government teachers and officials were from the Pokomo ethnic group. Teachers spoke very little Kiorma and children cannot speak Kiswahili, which results in a significant reduction in teaching quality. It is now widely accepted that early stage schooling should be undertaken in a child's mother-tongue, particularly in a non-literate environment (Yates, 2000). However, evidence does show that even when qualified teachers from the pastoralist community are available, this does not necessarily reduce the desire of teachers to live in town and avoid harsh living conditions, despite being accustomed to them (MOEST, 2000). Addressing the issue of teacher turn-over will be returned to later in the chapter.

Aside from the factors discussed above, teacher motivation and consequently teaching quality is further reduced in Tana River as a result of ethnic tension between the Pokomo and the Orma following violent clashes over access to the River Tana in 1998/99 (IRIN, 2009).

"Since the Pokomo war, the Pokomos don't teach my children well. They teach one week, go for pay in Hola and stay 2 weeks"

Respondent 93 (high wealth)

The severe shortage of qualified Orma primary school teachers means that currently, parents have to accept the current level of education on offer, or keep their children out of school. Tension over resource access, between pastoralists and neighbouring groups is not unusual in the drylands and can frequently lead to the imposition of barriers to accessing public services. Agriculturalists are frequently more educated and therefore occupy the majority of local Government posts which can result in a situation whereby pastoralists struggle to access services, or the quality of service provision is poor. In some cases, even the right to vote has been compromised as an extension of ethnic conflict over resources. Young pastoralists in Tana River reported that Pokomo Government officials in Hola refused them voting cards as they did not have official birth certificates.

6.5.2 Mobility and Education Quality

Education quality is conceived here in a broad sense which incorporates the ability of the target users to access the service. Public service provision should ideally be structured such that it does not undermine the production system of its intended users. When the service in question is education, quality issues can propagate marginalisation by limiting the capacity of service users to contest provision modalities (Molteno *et al.* 2000).

Detailed information on school attendance, drop-out, and completion rates was not requested from respondents due to limits of time and thematic balance discussed in Chapter Three. This lack of data means that firm conclusions concerning the role of mobility in compromising the quality of education received at school cannot be made. However, testimonies from respondents and secondary data sources do allow tentative conclusions to be put forward. It has been well documented through interviews with primary school teachers (Krätli, 2001), that school attendance in arid

districts plummets with the onset of the first rains following the long dry season. Children routinely contribute to household production during periods when labour requirements and returns to labour are extremely high. There has been some discussion in Kenya among school committees (Krätli, 2001) which was echoed by the Tiltila school committee, concerning rescheduling of the school holidays to coincide with annual periods of lowest attendance but as yet this has not come to fruition. As described above, enrolment figures can be misleading as they do not reflect attendance. Consequently, due to education participation issues associated with mobility, enrolment rates for exclusively mobile households in tables 6.6, 6.7, 6.8 may actually be an over-estimate of educational participation. Children from mobile households are likely to miss more days/weeks of education per term than settled families. Likewise, children from mobile households are less likely to complete grade eight as sporadic attendance combined with the other education participation issues outlined above, make it very hard to progress through to end of year examinations and ultimately attain the KCPE.

6.5.3 State Education and Cultural Concerns

As the figures in tables 6.9 and 6.10 show, while enrolment figures for community nurseries are higher than for state primary schools, the really impressive element is the improvement in gender parity (52.8 percent males versus 46.3 percent female) in comparison with primary education figures (43.5 percent males versus, 28.2 percent female). In addition to the reduction of physical barriers to enrolment innate in the community nursery school model (described above) there are additional cultural factors which render the model more attractive to parents and may help to explain gains in enrolment and gender parity.

There are several differentiating factors which might contribute to the increased enrolment (particularly of females). The first differentiating factor is that nursery is taught in Kiorma by an Orma teacher well-known to parents. This allays many fears concerning cultural continuity. The second factor is that the community nursery school structure is decentralised, which means that there are many small-scale

nurseries which are situated in or close to temporary settlements. This means that long journeys to school are not required and associated safety concerns (particularly for girls) are minimised. A third differentiating factor is that lessons are scheduled to make least impact on other household activities. If a group of families decide to migrate, the nursery can move with them. The main concern, as with other types of mobile schools, is that there is a sufficient aggregation of children to pay for the teacher. Due to the relatively basic education qualifications of the teachers, and the fact they are accustomed to mobile lifestyles, there is less teacher drop-out than has been the case for some of the mobile primary schools discussed in Chapter Five. Another important factor particular to community nurseries is 'ownership' and participation on the part of the parents. The parents play an active role in the running of the nurseries and as such, regard them as their own. These nurseries are regarded as community initiatives started for self-improvement and advancement of the Orma. Community nursery schools offer girls the chance to receive more education by starting younger. This can have an important impact even if the social convention of marriage at 13-14 years old remains unchanged.

6.5.4 Culture and Female Education

Concerns about culturally inappropriate socialisation, chastity, and security of daughters are bound up with the increasing importance of dowry to pastoral livelihoods (Arero, 2005; Ruto *et al.* 2009). All of these interconnected issues affect female educational opportunities and are expressed in the data simply as the necessity for females to leave school to be married. More difficult to represent was the more in-depth discussions about these issues, which revolved around cultural continuity and the importance of dowry to the household economy, also touching on female genital cutting (FGC), and its role in transforming the societal status of girls and thus excluding them from mixed gender education.

Dowry may be put in jeopardy by schooling which is regarded by the Orma as culturally inappropriate. Coeducational classes without adequate supervision are

believed to foster inappropriate relationships with the opposite sex which ultimately leads to pregnancy. The role of dowry in pastoralist livelihoods, particularly in light of diminishing herd sizes, is becoming increasingly important because dowry expectations have not dropped in proportion with average herd sizes.

6.5.5 The Value of Education

In addition to education quality and factors associated with cultural appropriateness, the perceived value of the education on offer also influences enrolment decisions. There is evidence in the study data that parental experiences of education influence the value that they place on their children's education. The relationship between paternal education and the proportion of children enrolled in primary school was examined. It was not possible to examine this relationship to the same degree for maternal education because of the small proportion of educated mothers (6.1 percent educated). If the male head of household has not attended school (72 percent of fathers), the enrolment rate is 28.3 percent, whereas for educated fathers it is 43.1 percent. The strength of the association is stronger for male children. Uneducated fathers' male enrolment is 33.7 percent and female is 22.5 percent. While educated fathers' male enrolment is 52.9 percent and female is 29.2 percent. These findings are supported by other research on this issue (Fratkin *et al.* 1999) which conclude that parental education does not seem to influence parental choice with regard to female enrolment.

Another factor in the perception of 'education value' is the availability of jobs for holders of the KCPE (Krätli & Dyer, 2009). Opinion among respondents was split on the value of education in terms of securing employment. The two quotes below illustrate the different beliefs concerning the probability that primary education can facilitate paid employment.

> *"I have eight children, none of them have been to the school- I don't have money for that. Children don't get anything from primary- to get jobs they must go to form four* (final year of secondary school) *and colleges"*
>
> Respondent 104 (high wealth)

"School is very important, we have seen children of the very poor who went to school are now employed and their parents are now rich"

Respondent 52 (low wealth)

The diversity of opinion on this issue seemed to reflect a process of transition whereby the perception of education is changing and its relative value is being reassessed in light of wider changes in the viability of the production system.

School curricula generally places very little value on pastoral indigenous knowledge and the representation of pastoralism in the classroom is typically as a backward lifestyle in need of modernisation (Krätli, 2000; Casciarri, 2006; UNESCO, 2010). The way in which state education is structured, means that parents are faced with a choice between passing on vocational/ indigenous knowledge and equipping their child with knowledge which is valued outside the pastoral sector.

6.6 Respondent Perceptions of the Future and the Pastoral Livelihood Strategy Framework

The factors that Orma pastoralists consider when deciding whether or not to enrol their children in school have been examined. Thus far, such factors were related to the costs and benefits associated with schooling under present conditions. This analysis neglects the perception of future conditions which also plays a significant role in parental decision making. An important additional motive for enrolment of children in school and indeed investment in other forms of diversification, is to increase income-generating capabilities in the future. Investing resources to enhance future livelihood prospects is described by Ellis (2000) as the household's 'asset strategy'. Here it will be referred to as part of the household's overall 'livelihood strategy'. In this section, parental perceptions of the future will be examined with reference to affects on both child enrolment and overall livelihood strategy.

The future viability of the pastoral production system is a key consideration for pastoralists making strategic investment decisions that will dictate their range of

future income generating activities. As reviewed throughout this thesis, there are a range of factors compromising the viability of the pastoral production system. Based on current trends, many of these factors are set to intensify in the future. East African drylands can be considered to be among the first to experience the effects of climate change due to their position with regard to the El Niño Southern Oscillation (Williams & Funk, 2011). Orma respondents frequently referred to the increasing frequency and severity of droughts experienced over the course of their lives. Descriptions of the changing climate were often recounted in connection with increasing resource competition with other ethnic groups.

> *"The main problem in the area is that rain is not as it was before, so heads don't produce much milk. There is overgrazing by people from northeastern* (Province)*- they are disturbing us and many people lost their life. There was clashes even yesterday at Chari-Dende* (confirmed by the Kenyan Broadcasting Corporation)*"*
>
> Respondent 62

> *"People are coming from other areas- Gari, Somali, Digodia, Wardei. Also ranches and national parks have taken our best grazing land"*
>
> Respondent 5

As well as changing rainfall patterns, respondents also pointed to changing vegetation and the presence of unfamiliar livestock diseases. The result of the more sporadic and sparse rainfall has been a decrease in animal numbers. The reduced herd sizes have brought about the erosion of social capital and indigenous institutions. An increasingly stratified society results from increasing engagment with the wider cash economy (Krätli, 2001), whereby the rich can consolidate their position and consensus based institutions cannot operate effectively. The presence of third party enforcement (Ensminger, 1992) further compromises the authority of indigenous institutions. Such changes in pastoral society have reduced the viability of the pastoral production system in a variety of ways which are only set to be exacerbated further.

Livestock loaning is an important coping mechanism which functions using social capital. The erosion of this practise is one way in which the resilience of the production system is being reduced.

> *"They had lots of milk before the days of drought- in those days people were willing to help one another. In the wet season when they were moving- when they settle a rich family automatically loans you 3-4 heads for milking. During those days a big number is having animals- nowadays they don't have"*
>
> Respondent 1

The viability of the pastoral production system is also threatened by privatisation of land, growth of both agricultural and pastoral populations, and the expansion of tourist game parks. The issue of land tenure and mobility which underpins many of these issues is discussed in more depth in the following chapter.

When the issues described above are considered together with the poor quality of public services and infrastructure described in Chapter Four, it is understandable that Orma pastoralists are beginning to question whether they are bequeathing a viable way of life to their children. Undoubtedly some of the increases in school enrolment witnessed in pastoral areas are due to the declining herd sizes which reduces demand for children to contribute to household production (Demberel & Penn, 2006). Equally, some of the enrolment increases are due to the 'hedging strategies' of better-off families wanting to maximize their income generating options. However, for poorer Orma households (low and some medium wealth families), the unprecedented levels of child enrolment in school is connected to their belief that pastoralism does not offer their children a secure livelihood. Examples of similar 'pastoral pessimism' abound in the literature (Salzman & Galaty, 1990; Carr-Hill, 2006; Krätli, 2006; Devereux, 2007; Anis *et al.* 2008; Ruto *et al.* 2009; UNESCO, 2010). Dyer & Choksi (2006) note that Rabari camel herders of West India were not interested in informal education as they saw their way of life as doomed. While poorer pastoralists, including the Orma, are investing in another livelihood option for their children, their

cultural identity is still intimately tied up with livestock and its key role in constructing social capital.

A result of this growing understanding that poorer pastoralists are starting to envision a future for their children outside of pastoralism, is that gains in primary school enrolment rates are now understood in many cases to be symptomatic of the increasing vulnerability of the poor (Krätli, 2006). This realisation among specialists runs contrary to mainstream narratives which point to successful decade long programmes of community sensitization. Such programmes were often accompanied by indirect incentives to sedentarise (Fratkin, 2007) which compromise the viability of pastoral production and somewhat perversely, result in higher enrolment rates.

> "*Before we thought school was not important but now people talk of school as very important because livestock numbers are falling and the only person that will survive is the one with schooling"*
>
> Respondent 8

> *"I was moving with animals but I lost them … I went to Malindi to look for a job as a watchman but I was denied as I wasn't educated. So I must educate my children to give them a chance"*
>
> Respondent 119

Even wealthier respondents who were not enroling their children in school commented that their perception of the value of schooling was changing, echoing findings by Heffernan *et al.* (2001) for other pastoralist groups in Kenya. Due to these changing attitudes towards education there is now a diversity of Orma livelihood strategies incorporating education, and by necessity, adapted to the specificities of its provision. These adapted strategies exhibit strong correlations between wealth and child enrolment and also between mobility and enrolment as outlined with reference to the fieldwork data above. A simple typology of livelihood strategies referred to as the 'Pastoral Livelihood Strategy Framework' is used to conceptualise the key dynamics in defining a family's livelihood decisions.

6.6.1 The Pastoral Livelihood Strategy (PLS) Framework

Dorward *et al.* (2009) outlined a conceptual framework to aid understanding of the livelihood strategies of the poor. The framework is based on the 'Sustainable Livelihoods Approach' (Carney, 1998) in that it relates the functions and attributes of poor peoples' assets and various forms of capital, to their livelihood status and strategies. Dorward *et al.'s* framework was developed based on work with mixed crop-livestock farmers in rural Mexico[77]. The Pastoral Livelihood Strategy (PLS) framework borrows conceptually from this framework by utilising an adapted form of the livelihood strategy typology, combining it with a theory of asset threshold dynamics (outlined in Chapter Four). It is essential that a detailed theory of threshold dynamics is at the heart of the PLS framework because of the key role asset thresholds have in defining Orma livelihood strategies and wealth dynamics. The PLS framework introduces a fourth livelihood strategy type ('dropping-out') to supplement the three utilised by Dorward *et al.* (2009).

> '***Dropping-out***' -diminishing returns from livestock keeping motivate a transition to investment in alternative livelihood activities.
>
> '***Hanging-in***' -activities are undertaken to maintain and improve livelihood levels although there are few spare resources to invest.
>
> '***Stepping-up***' -investments are made in livestock keeping activities to increase their returns.
>
> '***Stepping-out***' -existing livestock keeping activities are engaged in to accumulate assets as a basis for investment in alternative livelihood activities.

There are several key concepts within the PLS framework which guide the process of assigning a 'strategy type'. Determining a family's livelihood strategy requires a

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[77] The author contributed to the fieldwork in Mexico and the subsequent development of the conceptual framework (see Dorward *et al.* 2009).

holistic appraisal of their livelihood. Perceptions of the future (particularly viability of the production system) and asset holdings both form important components of livelihood strategy decision-making. It must be borne in mind that stated livelihood strategies and future plans are often more akin to aspirations than to a *de facto* livelihood strategy. For example, based on fieldwork undertaken by this author with livestock keepers in rural Mexico, smallstock keeping may be embarked upon with the stated intention of improving production and 'stepping-up', but subsequently used more as a means of saving or 'buffering'[78] as part of a 'hanging-in' strategy. It is reasonable to assume a coherent link between current investments and future plans, therefore an examination of current investment patterns and asset use can yield more accurate approximations of *de facto* livelihood strategy than using elicited responses or stated preferences.

Elicited responses concerning the future typically suffer heavy bias based on the problem of eliciting true preferences (and thus accurate predictors of behaviour) when there is no commitment on the part of the respondent to act on their stated preference. In the contingent valuation (CV) literature, this source of error is termed 'hypothetical bias' (Pearce & Moran, 1994). There is also a risk of what is termed here 'pre-emptive bias', whereby the respondent attempts to supply what is perceived to be the 'correct answer' to enquiries concerning livelihood strategy. Sometimes the perception of the 'correct' answer is based on leading questions (FAO, 2009b) posed by the interviewer or on the previous known activities of the organisation that the interviewer represents (e.g. Government extension officers being associated with the promotion of 'improved' breeds). The convergence of these potential sources of bias mean that a holistic livelihood assessment, which reveals current asset use and investment patterns, is a better method for assigning 'livelihood strategy type' than relying on stated preferences alone.

[78] The 'buffering' role of livestock (particularly smallstock) refers to their use in meeting unexpected expenses when other income sources fail.

A second important concept within the PLS framework is the significance of 'choice' versus 'necessity' in making key livelihood strategy decisions. Ellis's (2000) paper on livelihood diversification highlights the importance of this distinction[79]. The paper acknowledges that it is a useful conceptual tool with which to draw a distinction between the determinants of diversification but that the mutual exclusivity between the two motivation types is misleadingly reductive. Diversification is typically motivated by a range of causes and constraints, although generally a primary motivating factor can be associated with significant livelihood strategy decisions. In many instances the motivation can be broadly ascribed to either a 'choice' or a 'necessity'. The motivation for a particular livelihood strategy decision may denote the strategy type. For example, while both 'dropping-out' and 'stepping-out' of livestock production result in the pursuit of alternative livelihood activities, the former is motivated by push factors (or 'necessity') while the latter is motivated by pull factors (or 'choice'). The fact that push factors, such as declining returns to livestock keeping, are motivating 'drop-out' will have implications on the resources available to invest in the new activities, and the likely success and sustainability of the new livelihood activity.

Respondents' livelihood strategies can influence both the ability and willingness of parents to enrol their children in formal education. Having outlined a framework with which to interpret and analyse the various livelihood strategy 'types' encountered during the fieldwork, the following section examines how livelihood strategy typically varies with family asset holdings and other key factors.

[79] This has been conceptualised previously as being a contrast between survival and choice (Davies, 1996) or between survival and accumulation (Hart, 1994). It corresponds in the migration literature to 'push' versus 'pull' factors (e.g. Bigsten, 1996).

6.6.2 Livelihood Strategies of Orma Pastoralists

Low Wealth Families

> *"The mobile life is better because you drink more milk and your animals will be healthy. The only good thing of being settled is education"*
>
> Respondent 70 (low wealth)

Families in the low wealth category do not have livestock holdings adequate for subsistence, they are generally surviving on a combination of World Food Programme (WFP) food aid ('General Distribution' and 'School Feeding'), opportunistic cultivation, wild animals/foods, and milk from their livestock. Low wealth families are faced with two main options[80] regarding livelihood strategy, they can either 'hang-in' or 'drop-out' of livestock production as their principal livelihood activity.

'Hanging-in'

'Pull factors' motivate a low wealth family to 'hang-in'. In this context, 'pull factors' are associated with the desire to remain free from reliance on external support, and to retain the possibility of rebuilding their herd over-time, thus offering their children a viable future in livestock keeping (Heffernan *et al.* 2001). If a low wealth family can remain mobile, the younger children will herd family livestock, while older boys will herd for pay (payment is usually one heifer per year, or more if herding for Somalis). They try to expand their herd from their sons' pay, their daughters' dowries, and through livestock multiplication, until they must pay their sons' dowries. Families employing this strategy can be conceptualised as struggling around the 'poverty threshold'. Often the motivation and skill of the head of the family, and the level of social capital (the 'resilience buffer') are key factors in the ability to maintain the asset base and avoiding progressive loss of livestock (asset 'decumulation').

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[80] For the poorer members of the low wealth category a 'hanging-in' strategy may not be possible due to herd loss and lack of social capital.

If a low wealth family employing a ‘hanging-in’ strategy educates some children, it can be said to be motivated by both push and pull factors and can therefore be described as a ‘hedging strategy’ or a split ‘hanging-in’ and ‘stepping-out’ strategy. A ‘stepping-up’ strategy is being forgone in order to sell some animals to invest in education. This form of ‘stepping-out’, as part of a ‘hedging strategy’, is a livelihood diversification strategy designed to strengthen the household economy and mitigate risk within the context of a continuing engagement with pastoralism (Carr-Hill & Peart, 2005). In certain instances, investment in the ‘stepping-out’ element of an overall ‘hedging strategy’ can actually compromise the ‘hanging-in’ element in the medium term. This apparently risky strategy is often a reflection of their perception of the non-viability of the production system in the future.

Struggling to maintain the family herd and pursue a ‘hanging-in’ strategy has the advantage that if you can feed on milk and minimise the purchase of food from shops, your asset base will grow, which improves production and reduces the necessity for food purchases (supporting ‘accumulation dynamics’ (refer to figure 4.2)). If household mobility can be maintained, social capital is also accumulated with families higher up the wealth distribution. When moving with a wealthier family, a low wealth family frequently offers security and herding assistance at key times of the year (e.g. at the start of the long rains when animals are weak and terrain can become boggy). The disadvantage is that without a herd adequate for subsistence, it is an extremely hard life (accessing food aid while moving can be problematic, as discussed in Chapter Four). Another disadvantage to a ‘hanging-in’ strategy is that schooling children is difficult due to household mobility and the increase in household labour requirements associated with pursuing the best grazing resources. This is reflected in the enrolment data. Mobile low wealth families enrol 30.8 percent of children in primary school compared with 44.2 percent for settled low wealth families. These enrolment figures underestimate the disparity of participation in education between settled and mobile children because enrolment data mask disparities in attendance and completion rates. Low wealth families are

unable to utilise a household splitting strategy because their herd size is too small, and maintaining and feeding two separate households is generally too expensive.

'Dropping-out'

> *"The advantage of settlement is education- later your children can help you if they are educated"*
>
> Respondent 97 (low wealth)

The alternative livelihood strategy for low wealth families is to settle in the 'town'[81], rather than remaining partially mobile and attempting to rebuild their herd gradually. The majority of low wealth families (68.5 percent) are permanently settled and rely on food aid and their remaining livestock to educate their children in a bid to secure income sources outside the pastoral economy. A 'dropping-out' strategy[82] is motivated principally by the declining returns of their current livelihood activity (push factors). Settlement in the *bula* ('town') is regarded by mobile pastoralists as an *"easy life for those who are lazy"* (although it is conceded that sometimes this strategy is forced upon people who have been left with very few livestock). 'Dropping-out' of active livestock production guarantees access to food aid (which as discussed in Chapter Four, can be a significant source of food), and increases opportunities for engaging in commerce, social networking, development projects, and accessing education, healthcare, and a constant supply of water.

Due to poor quality grazing around the settlement, the remaining herd (plus additions from sons' herding payment and daughters' dowry) may be kept in the cattle camp of a relative or friend to improve livestock reproduction and health. Alternatively, the herd can be grazed around the settlement with consequently meagre production

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[81] What is referred to by respondents as 'town' is a remote settlement of less than 1000 people, with no electricity or running water, and not connected to other settlements with man-made roads.

[82] While 'dropping-out' is motivated by push factors there is usually an element of choice regarding when to settle and which activities to pursue. In this sense 'dropping-out' can still be regarded as a strategy rather than 'falling-out' which is based totally on push factors and implies an absence of alternative livelihood activities. 'Falling-out' can be regarded as the first stage of destitution.

levels (albeit somewhat enhanced by *laf sera*[83]). Because of the resulting poor supply of milk, livestock are sold in order to supplement food aid and cultivation if on-going employment is not found. In the study area, opportunities for employment were extremely limited and consisted primarily of transporting livestock to market for richer pastoralists.

The disadvantage of the 'dropping-out' strategy is that while it involves less physical effort and less endurance of consumption deficits, it gradually erodes the asset base (decumulation dynamics) which compromises long-term resilience. A family who settled some time ago, and whose herd has dwindled to a few cows, goats and sheep, will by this stage have probably built up enough social capital to guarantee their position on the food aid beneficiary list. Even if the Kenya Food Security Steering Group (KFSSG) decides to cut beneficiary numbers (based on the biannual assessment), they will remain on the list. Mobile families and those with larger herds are more likely to have their allocation cut. In this situation, the motivation to both have more children and to enrol those children in school is overwhelming due to the combination of 'per child' rationing of relief food (albeit a diminishing marginal allocation- see section 4.8.3) and the presence of the WFP school-feeding programme. This is combined with a growing belief in the role of education in accessing paid employment outside the pastoral sector (as discussed above).

The vast majority of respondents stated that if they were given livestock or money they would return to mobile livestock keeping through use of a household splitting strategy. This is indicative of the dominance of push factors in a transition to a 'dropping-out' strategy.

[83] See Chapter Three (section 3.5.2) for a description of *laf sera.*

Medium Wealth Families

"My children want to learn but my animals want to move"

Respondent 57 (medium wealth)

"I want to settle because my herds are not growing big, I will start a business and educate my children, to have another line if a big drought comes"

Respondent 107 (medium wealth)

Herd sizes in medium wealth families are typically between the poverty and subsistence thresholds. Resilience in the face of extreme climatic events such as prolonged drought is therefore much reduced in comparison with high wealth families (medium wealth families are below the 'insurance threshold'- (refer to figure 4.2)). Because of this elevated exposure to risk, a 'hedging' strategy is generally preferred whereby resources are invested in both 'stepping-out' and 'stepping-up'. Medium wealth families are better able to afford education than low wealth families and have more motivation to invest in alternative livelihoods for their children, as compared to high wealth families. This results in children of medium wealth families being the most educated of any wealth category. Medium wealth settled families enrol more children in primary education (60.5 percent) than any other wealth or mobility sub-group, and their children transfer to secondary education more successfully than any other sub-group. Sixty-one percent of medium wealth families are mobile or 'split', which means that they are subsisting from their livestock to a much greater degree than low wealth families who are predominantly settled (68.5 percent). This marks a key differentiation in livelihood strategy whereby medium wealth families are pursuing a 'stepping-up' strategy in tandem with a 'stepping-out' strategy. Medium wealth families are trying to develop their asset base, such that they are moving towards the 'subsistence threshold', whilst simultaneously diversifying income sources through the education of their children. The pull factors associated with investing resources in education are based on developing a source of income which is not subject to the same environmental variability as livestock keeping (Leggett, 2005).

High Wealth Families

> *"Before the school* (had opened) *I used to move with both houses- now I move with only one house"*
>
> Respondent 139 (high wealth)

> *"You educate your children but you are left with no heads* (cattle)*, your children will have no milk to eat at the school"*
>
> Respondent 99 (high wealth)

A family in the high wealth category is likely to be mobile and comprise two households with livestock holdings above the 'subsistence threshold' and possibly above the 'insurance threshold' (refer to tables 4.1, 4.2 and 4.3). In this scenario, education would understandably take a low priority due to the pull factors associated with 'stepping-up' and alternative 'stepping-out' strategies with more reliable returns (such as opening a shop or purchasing a vehicle). The family economy is buoyant and training children to become expert pastoralists is considered adequate education for their future lives. Mobility and increased labour demands associated with large livestock holdings, make education even less attractive and practical. Pursuing a 'stepping-up' strategy in combination with risk management strategies discussed in Chapter Four is deemed adequate insurance against the risks associated with extreme climatic events. Increasingly, however, formal education is being incorporated into high wealth 'stepping-up' strategies as the perception of future conditions and the importance of education changes. The extremely low enrolment rates for children from high wealth families (26.8 percent) clearly demonstrate, however, that 'stepping-up' remains the dominant strategy.

6.6.3 The Utility of the PLS Framework

Over the last two decades, the conceptualisation of poverty and the ways in which people escape from, or fall into poverty, has become more holistic (Chambers & Conway, 1992; Carney, 1998; Robb, 1999; Norton, 2001; Barrett *et al.* 2001). This has improved the capabilities of policy analysts and others working to reduce poverty, but it has also made analysis more complex. The framework outlined above,

adapts a simple livelihood strategy typology developed by Dorward *et al.* (2009). By combining the adapted typology with the theory of asset threshold dynamics (developed in Chapter Four), the PLS framework serves to organise diverse and complex pastoralist livelihood dynamics into conceptual categories, which can form the basis for targeting specific intervention types. For example, it is not an efficient use of resources to involve pastoralists in a long term project to support pastoral mobility if they are committed to a 'stepping-out' strategy. It would be preferable to offer training and support to increase their chances of success in alternative livelihood activities. Pastoralist society is more stratified than ever before, which not only compromises the integrity of local institutions (which function predominantly by consensus) but means that targeting of development interventions and planning service provision is increasingly difficult. By understanding how and why different sections of society are pursuing often dramatically different livelihood strategies, services can be designed to support these various strategies without allowing the voices of the most marginalised to be drowned out. The PLS framework offers a coherent short-hand and theoretical underpinning for understanding complex pastoral livelihood dynamics, which may be of use in communication between drylands development actors.

In the next section, the potential for conflict between informal learning and formal education and its significance for the provision of appropriate education services in the drylands will be considered in light of the various livelihood strategy types outlined above.

6.7 The Role of Informal Learning and Indigenous Knowledge

Traditional education and the transmission of indigenous knowledge occurs most intensively during youth and early adulthood, this is also the period during which the principal inculcation of norms and values takes place (Rao, 2006). More than just a process of socialisation and enculturation, the transmission of indigenous knowledge has a significant role in ensuring pastoralists have the necessary skills and knowledge

to secure a successful livelihood. Frequently, these skills and knowledge are regarded by outsiders to be somehow innate to pastoralists. Properly valuing pastoral indigenous knowledge and skills (and crucially the process of transmission), recasts the role of children's contribution to household production which is commonly labelled 'child labour'. This term is avoided here because of its association, in the popular consciousness, with forced child labour in garment factories etc. If a child's contribution to household production is understood as 'vocational training' (Krätli & Dyer, 2009) or a form of informal learning which equips the child with the skills required for a successful pastoral livelihood, then some of the negativity associated with the term 'child labour' seems inappropriate in this context (Leiten, 2000).

An Orma boy herding in the cattle camp is both earning his dowry for when he marries and serving an apprenticeship under the tutelage of the herd owner and older herders. Including these traditional forms of learning and training only under wider processes of socialisation and enculturation diminishes the educational legitimacy of the vocational training a boy receives while herding in the cattle camps, or indeed that which a girl receives from her mother at the homestead.

The analysis of the implications of non-equilibrium ecology for dryland pastoral development discussed in Chapter Four, emphasises the importance of opportunistic management strategies to track increasing environmental variability. According to Scoones (1995), efficient tracking requires 'high levels of skilled labour input'. The role of formal education in potentially undermining the transmission of the indigenous knowledge on which the supply of skilled labour is based, must therefore be taken very seriously. Current education services for pastoralists tend to result in a negative trade-off between formal education and informal learning (Swift, 2010). The knowledge transmitted as part of traditional 'education' is acquired through experience, it is a form of 'situated learning' (Siaciwena & O'Rourke, 2000) which cannot be transposed to a classroom and taught by a primary school teacher (even by a teacher from a pastoralist background) (Bloch, 1998). Focusing on the vocational

element of enculturation is not to undermine the erosion of other elements of pastoralists culture under prevailing school-based education provision. As discussed in Chapter Five, these other elements, such as language of instruction and being socialised in another cultural tradition, are also barriers to enrolment of children in school and sources of alienation which hinder 're-engagement' with pastoralism after leaving school.

The effects of formal education in depriving children of the skills required to be successful pastoralists have been virtually unstudied (Carr-Hill, 2006), with the exception of an isolated piece of work by Galaty (1986). Galaty found that non-schooled Maasai boys could perform much more complex classifications and identifications of cattle than Maasai schoolboys. The author argues that to remove the children from the context of experiential learning affects their cognitive processes, both in terms of content and organisation. These unintended effects of formal education, which reduce a child's chance of successful specialisation within the pastoral economy (Semali, 1994; Dyer & Choksi, 1997), have to be balanced with the positive aspects of formal education. The need to understand the net effect of formal education is the subject of the next section, while the rest of the chapter focuses on the potential for minimizing the negative aspects of state provided education to pastoralists.

6.8 Formal Education and Livelihood Prospects

The effect of formal education, in terms of livelihood outcomes, is hard to disentangle. Effects on poverty and employment are far more important than exam results and enrolment rates on children's long term prospects. It is possible to measure some of the livelihood outcomes of formal education, but in most cases the data does not exist (Krätli & Dyer, 2006). Policy-makers generally judge education policies based on expected outcomes (Krätli, 2000) such as increased enrolment or improved gender parity. These criterion offer a narrow view of the overall effect of education policies (Jansen, 2005). More holistic criterion based on livelihood

outcomes, while harder to quantify, would offer more insight into the role of education in alleviating poverty and stimulating development. The lack of information on the effects of formal education in terms of these broader criterion only serves to reproduce current provision modalities and pastoral marginalisation.

The evidence that formal education boosts pastoral productivity is not well supported (Sarone, 1986; Holland, 1996; Demberel & Penn, 2006). Some isolated studies are emerging on the effects of education on poverty. Oxfam's draft *Report On The State Of Pastoralism* (2009) cited data from Northeastern Province (adjacent to Tana River District), whereby households with no education had poverty levels of 62 percent and above, while those with primary education had poverty levels of 46 percent and above. This data suggests that formal education may be having a positive effect on poverty alleviation. These findings are inconsistent with data from the current study in which 40.2 percent of families headed by an uneducated adult were in the low wealth ranking, compared with 52.2 percent for families headed by an educated adult. The Orma data concurs with Krätli's (2000 p.4) proposition that 'pastoralists that become an unskilled underclass are more likely to have some years of formal education'. The data also fits with trends identified in the previous section in which low wealth families are more likely to educate their children as part of a 'dropping-out' strategy. The success of such a strategy is highly dependent on the availability of employment opportunities.

It is possible that Oxfam's (2009) data, collected in Wajir, Northeastern Province, reflects a more widespread availability of employment in that area compared to Tana River District (Carr-Hill & Peart, 2005). As highlighted earlier in this chapter, the lack of employment opportunities in the Galole region of Tana River may be linked to the presence of a comparably well-educated ethnic group who occupy the majority of local government jobs (Holland, 1992). As further studies emerge on this important issue, it may well be that the effects of formal education are highly contextually specific as in the two contrasting examples above. However, the

existence of employment opportunities will play a significant role in determining whether the new skills and knowledge learned at school can be put to productive use (Rao, 2006) and whether the accompanying loss of vocational skills and knowledge outweigh the benefits of formal education.

The changing attitudes to education highlighted in section 6.3.2, show that at least some children are securing employment and sending remittances back home. The extent to which this occurs among pastoral groups in Kenya is unknown due to a lack of data. In the current study only 2.9 percent (4/140) of respondents were receiving remittances. This only justifies current enrolment rates if the perception of the viability of pastoralism is particularly pessimistic and there is an expectation of more job opportunities or improvements in education quality in the area. While employment opportunities are undoubtedly unevenly distributed throughout East Africa's drylands, generally there are very few opportunities compared to other climatic regions owing, if nothing else, to the very poor communication and transport infrastructures and low population density (Sifuna, 2005; Rao, 2006).

Pastoralist children who are 'fortunate' enough to complete primary education have most likely become used to a very easy life compared with their peers (who have been herding the cattle camps or assisting their mothers for those 8 years). They do not have the skills, knowledge or experience of their peers to gain employment in the pastoral sector. As a growing number of authors have observed (Ruto *et al.* 2009; Krätli & Dyer, 2009; de Jongh & Steyn, 2006; Arero, 2005), the lack of sufficient employment opportunities for these standard eight school leavers is creating growing numbers of disillusioned and 'deskilled'[84] pastoralist youths. These young adults are not only isolated from active inclusion in pastoral life by their lack of herding experience, they often have aspirations for a 'modern' life fostered through an education system which paints pastoralism as a relic from the nations past (Sifuna, 2005). They aspire to buy expensive clothes, *miraa*, radios, torches, wristwatches,

[84] There is a growing literature on the concept of 'deskilling' among rural farmers in India. See Stone (2007) for example.

and they are estranged from their peers in cattle camps by lack of common experience and perspectives (Carr-Hill & Peart, 2005). Orma pastoralists' sense of identity and their perception of themselves and of prosperity, is altered through the process of formal education as they recognise themselves in what Bourdieu (1977 p. 132) refers to as 'the public objectivity of an already constituted discourse'. These new divides within households and communities undermine traditional forms of social capital without creating new ones (Krätli, 2000). Jealousies and discontentment among siblings who are assigned different roles within the division of household labour (those contributing to production versus those enroled in education), while initially unproblematic (Krätli, 2000), is becoming a bigger problem (Heffernan *et al.* 2001).

The cultural and social effects of formal education (as currently provisioned) paints a stark picture of its role in eroding cultural continuity. Crucially, when formal education does not actually offer access to opportunities outside the pastoral sector, it still often alienates school-leavers from their culture and livelihood. The following section will examine these dynamics in light of the discourse around the 'right to education'.

6.9 Rights and Education

Since the declaration of universal human rights in 1948 (UN-DHR, 1948), the notion that certain 'rights' transcend social and cultural values has assumed an unimpeachable status despite the efforts of authors such as Lukes (1991) who challenge the efforts of writers such as Habermas, Kant and Rawls to establish an 'Archimedean point' which would provide universal rational foundations for generalisable norms and categories of justice. The UN (1948) declaration is regarded as one of the most important undertakings by humanity towards a more equitable world. Universal human rights have been used as a minimum standard by which national governments and the world's rich can measure their achievement with regard to their responsibilities to the poor. To a lesser extent 'human rights' have also

become the focus of attempts, by the poor and their advocates, to secure access to resources to satisfy their basic needs. In this section, some of the uses of 'rights' by national and international organisations, which are at odds with the spirit of these goals, will be examined.

The universal human right to education does not mention school-based education. It states that elementary education is to be 'free and compulsory', although it does include an element of parental choice with regard to the nature of the education received (Article 26, para.1, UN-DHR, 1948). At the World Conference on Education For All (EFA) in 1990 the same broad vision of education was reaffirmed. Governments around the world signed up to the international pledge of EFA (Dyer, 2006). However, by the time of the Millennium Declaration (2000), the conception of education had been narrowed considerably to focus on school-based education framed within a specific Millennium Development Goal (MDG). The emphasis on MDGs in setting the global development agenda can be considered problematic due to the requirement for measurable results at the cost of more holistic education goals, as discussed in Chapter Five.

The focus on formal education in MDG3 is accompanied by an implicit belief that schooling is always good and that formal education automatically leads to empowerment. This has left many policy-makers with the impression that 'school is the answer' regardless of what happens inside the school or the effects on the child's future livelihood (Anis, 2008). Some of these secondary effects (discussed above), suggest that empowerment is not the automatic result of the elimination of 'disempowering illiteracy' (Krätli, 2000 p.4). There is an assumption that inclusion in formal education equates to inclusion in development. Crucially, though, it is development as perceived in the 'western model' whereby pastoralists settle and become 'modern' livestock keepers, regardless of the evidence published over more than three decades which firmly rejects the viability of sustainable intensive

production systems in the drylands (Baxter, 1975; Sandford, 1983; Scoones, 1995; de Bruijn & van Dijk, 1995; Pratt *et al*. 1997).

This outdated belief in the benefits associated with sedentarisation, serve to legitimise the current provision of education services in the drylands. The fact that pastoralists cannot access education without settling is not regarded as problematic because of the overarching development goals of the state (Pennells & Ezeomah, 2000). These goals are enforced by making school-based education compulsory (despite the element of choice in the original conception of 'human rights'). In Kenya, the 2001 Children's Act commits the government to 12 years of free compulsory formal education (GoK, 2008). This is enforced with fines and threats of jail time for those without power and influence enough to avoid prosecution. During the course of the fieldwork a number of respondents were encountered who had been fined for non-enrolment and others who had migrated away from areas with particularly zealous chiefs/sub-chiefs.

The concept of 'universality' means that rights transcend culture, despite the fact that the concept itself is culturally located and has an ideological heritage (Wilson, 1997). Universality is a fundamentally problematic concept when rights become compulsory. Anthropologists who work from a standpoint of cultural relativism reveal that objective truth, goodness and justice are not valid concepts when transplanted into different cultures (Donelly, 1989).

The 'right to education' was conceived as compulsory because children are not able to claim their rights. The universality of the notion of rights (founded on Western individualism (Marx, 1977) means that a child's right to education should not be subject to their parents views or their need for their children to contribute to household work. Here the ideological nature of 'universal rights' becomes very apparent, whereby a child is regarded in isolation to wider social structures. This is an ideology with a cultural history based in western Europe (Marx, 1977), and not

necessarily an objective truth with which to apply to every culture in the world (Lukes, 1991). These decontextualised discourses around the compulsory 'right' to education make little sense in societies where the individual is not the basic productive or social unit (Dyer & Choksi, 2006).

In a pastoralist society, like that of the Orma, the danger of focusing on the rights of the individual is that it artificially separates their best interests from those of their family (Krätli, 2000). Fundamentally, if the household production system is undermined by the loss of mobility and the loss of children's contribution to production, (in most cases) this will have a more profound and immediate effect on the well-being of the child, than any gains from formal education. Separating the child from the family can therefore significantly disrupt the structure of the pastoral production system. Despite this, at the core of contemporary educational thinking is a rights-based discourse which is geared towards the rights of the individual.

The quality and culture of education, the costs to the production system of accessing formal education, and the effects of formal education have been examined throughout this chapter. In light of these insights, and with reference to the discourse around the 'compulsory right to education', it seems that forcing parents under the banner of 'rights', to enrol their children in a form of education that undermines their way of life, is problematic. Representing parents' difficult choices regarding household production and school enrolment as contravening their children's human rights, circumvents state responsibility to provide appropriate education services to all its citizens (Carr-Hill & Peart, 2005; Molteno *et al.* 2000). The potential role of alternative education provision in both reducing the negative effects of formal education, and costs to the production system, is the subject of the following section.

6.10 Education Provision Modalities

The discussion thus far has looked at the factors involved in Orma pastoralists' decision to enrol their children in school. Their ability to enrol, the quality, culture,

and value of education, and their perception of the future are all considered key factors in this decision. Through examination of these factors, several key barriers to enrolment have been identified: the cost in terms of production from reduced mobility and household labour; cultural and safety concerns associated with long walks to school and the coeducational school environment (particularly affecting female enrolment); and the trade-off between formal education and informal learning which, in light of the poor opportunities for employment, can compromise children's future livelihoods (Swift, 2010). This section will focus on the degree to which these barriers can be circumvented through the adaptation of existing school-based education and through alternative forms of education provision.

The issue of including pastoralists in EFA is of growing importance in many international and national institutional contexts due to the realisation that existing provision is inadequate to achieve EFA or MDG3 by 2015. There are estimated to be 60 million nomadic pastoralists across twenty African countries, and enrolment rates are very low (UNESCO, 2010). The approaching deadline for the Millennium Development Goals has raised the profile of pastoralist education and generated interest in alternative forms of provision like distance learning (Krätli & Dyer, 2009; UNESCO, 2006). There is evidence that these alternative forms of education provision are capable of bypassing the barriers to enrolment in school-based education. Initial use of distance learning and other new forms of provision has been encouraging. Increases in enrolment rates and gender parity have been observed in a number of projects (Robinson, 1999; Pennells & Ezeomah, 2000; Yates, 2000; UNESCO, 2002; Sanou, 2003; Carr-Hill & Peart, 2005). While two Educational Television (ETV) projects - the Mexican Telesecundaria and Brazil's Telecurso 2000, now provide access to basic education for hundreds of thousands of people (Dodds, & Edirisingha, 2000).

The success of Koranic schools at maintaining enrolment levels among learners with work commitments and mobile livelihoods, has led some authors (Molteno *et al.*

2000; Carr-Hill Peart, 2005) to suggest the adoption of some of the characteristics of these schools by state primary schools. In the study area, respondents sometimes reported sending their children to both formal school and *madrasa. S*ome respondents highlighted cost issues associated with primary and nursery school.

> *"I have two children, they are both too young for school but I willl send to the madrasa [...] Madrasa is free, you have to pay for nursery as it is a private teacher"*
>
> Respondent 67 (medium wealth)

The timetable and mobility of *madrasas* (from the Arabic *darasa* 'to study') and *duksis* (a Somali word) are harmonised with the requirements of the pastoralist production system and culture. The school times are organised around children's work commitments and migration patterns. This is facilitated by the teacher or *imam* (from the Arabic *imām* 'leader') often being a livestock owning pastoralist himself. In the study area, the education offered in these *madrasas* was extremely limited. Children learned to memorise the Koran by writing passages on a wooden board using a stick for a pencil, and milk mixed with charcoal for ink. The *madrasas* witnessed by the author consisted of 20-30 young boys around a huge fire in the evening, all reciting their own passages repeatedly while rocking gently back and forth. They were supervised by the *imam* who wielded a whipping stick. Parents suggested that the children did not understand the passages that they were memorising as they did not speak Arabic. Koranic study was the only subject taught in the *madrasas*.

Adapting the school timetable such that lessons start in the early evening when children return from grazing the herds or have finished collecting wood, fetching water and cooking etc, offers the potential to boost enrolment in state primary schools (Anis, 2008). However, with fading light comes the need for electricity, this problem is solved in the *madrasas* by teaching around a huge fire. This will be more difficult in a classroom setting, particularly because *madrasas* require very few

teaching and learning materials whereas formal education frequently requires learners to view a blackboard and share a text book.

In terms of mobility, *madrasas* make it easy for parents to enrol their children. Experiments with mobile schools in Africa have generally been confined to small-scale externally funded projects. Twenty years since the first attempts were made in Nigeria, the mobile school system is used sparingly because of the huge problems associated with the model (Tahir, 1997). As described in Chapter Five, mobile schools struggle to find committed and adequately qualified teachers and sufficient aggregations of students to function sustainably. It can be anticipated that there would also be significant monitoring problems if small-scale mobile schools were to be funded and accredited by the state. In summary, it seems that *madrasas* function well in a mobile pastoralist context, but due to the limited nature of the curriculum and the status of the teacher, they may only be partially transferable to formal school. If a source of electricity were available, however, the adaptation of the formal school timetable may offer increased access for some students.

Based on respondent views in the current study it can be anticipated that training of local pastoralist teachers may significantly reduce barriers to enrolment in formal education. In Chapter Five the importance of the language of instruction was emphasised, in improving the effectiveness of a child's early years of education. A teacher from the same ethnic group and speaking the local language also reduces concerns about cultural continuity. A teacher from the same ethnic group will also reassure parents concerning the negativity associated with depictions of pastoralists in school (UNESCO, 2010; Krätli, 2006). For pastoral districts that are largely Muslim (Wajir, Garissa, Tana River, Isiolo, Marsabit, and Mandera) formal education is associated with Christianity (Ruto *et al*. 2009). This is another argument for investment in training of local pastoralist teachers in order to reduce the reluctance of parents to enrol their children in school.

Based on views expressed by respondents, the content of school curricula is not a considerable barrier to the enrolment of children. Krätli (2000) terms the framing of poor pastoralist enrolment as a response to irrelevant curricula as the 'curriculum relevance explanatory paradigm'. It seems that while it is highly desirable to tailor the school curriculum to be relevant to the target audience it is not as important as the teacher fostering a non-antagonistic cultural environment and other factors discussed above (Carr-Hill & Peart, 2005).

6.10.1 Distance Learning

Based on the examination of barriers to enrolment of Orma pastoralists and the potential for adaptation of existing provision, it seems that distance learning is the only form of provision that offers real potential for the achievement of EFA in Africa's drylands. The fundamental incompatibility between formal school-based education and pastoralist livelihoods, centers on the need for mobility, children's contribution to household production, and the trade-off between formal education and informal learning. The latter is particularly problematic in a drylands context with severely limited job opportunities for the small minority of learners who attain the KCPE. Earlier in the chapter, the factors affecting the decision of an Orma parent to enrol their child in formal school-based education were examined. Many of the barriers to enrolment that were identified could be circumvented under a well-resourced distance learning programme. This section will briefly identify the ways that distance learning can reduce these barriers before going on to highlight some of the challenges associated with establishing a successful distance learning programme in the drylands and in Tana River District in particular.

Assuming learners are issued with a transistor radio then they would be able to tune-in to lessons during the course of their migrations. They would still be able to contribute to household production, and the mobility of the family's herds would not be constrained (Pennells & Ezeomah, 2000). Distance learning also has the potential to counter some of the structures which marginalise women and girls and limit their ability to participate more fully in society and the economy (Siaciwena & O'Rourke,

2000). Orma girls are less able to leave home to attend school for a variety of cultural and safety related reasons discussed above.

The fundamental incompatibility between school-based education and mobile pastoralism results in a trade-off. The trade-off is conceptualised here as formal education versus informal learning. This key incompatibility has an important role in defining Orma livelihood strategies as organised in the PLS framework. Under current education provision, families with viable herds may be ensuring more secure livelihoods for their children by keeping them out of school. For male children, informal learning (which incorporates what can be regarded as 'vocational training') is likely to be more useful to the child than the relatively poor quality and sporadic education on offer at the school. For female children destined for marriage at 13-15 years of age, enrolment in often distant coeducational primary schools, taught by teachers from a rival ethnic group and different religion, is an unattractive proposition for parents. Enrolment is perceived to jeopardize their marriage and dowry prospects, and to deprive them of the skills and knowledge necessary to run a mobile household. The vocational element of informal learning forms only one part of the process of cultural reproduction. Distance learning offers the chance for children to remain fully integrated in this process, such that they can gain a formal education while simultaneously attaining the skills and knowledge required for a successful pastoralist livelihood.

Through the maintenance of engagement in pastoralist production and cultural practises, many of the negative effects of formal education are diminished. Cultural alienation caused by the promotion of negative pastoralist stereotypes in school and the prolonged exposure to a comparatively 'easy life' can make it very difficult for school-leavers who cannot find employment to reintegrate into pastoralist livelihoods. A boy of 15 from a low wealth family, who has left primary school after many years of WFP school feeding and living in a settlement with little work responsibilities, will find it hard to return to the cattle camps with his peers (quite

apart from his lack of skills and knowledge). Distance learning offers the potential for a child to undergo formal education without losing their engagement with the pastoral production system. Subsequently, if employment cannot be secured outside the pastoralist sector, the boy will be far more likely to successfully forge a livelihood in pastoral livestock production.

Distance learning also reduces the disruption to formal education that is normally associated with insecurity and conflict (Carr-Hill & Peart, 2005). Learners are not required to undergo long unaccompanied journeys to the school, which particularly affects girls attendance even with relatively low level insecurity. For the Orma, insecurity is often correlated both with conflict over grazing resources and water access, and the security situation in Somalia. As described in Chapter Two, when problems erupt in Somalia (as they did in the 1990s), Tana River experiences an influx of both people and weapons (Leggett, 2001). Many respondents reported withdrawing their children from school during periods of conflict. Distance learning clearly offers a form of education provision which reduces the impact of conflict and insecurity.

Another benefit of distance learning is that it can facilitate 'family learning' (Krätli & Dyer, 2009). Parents can oversee and participate in distance learning and the process of education becomes more transparent and accessible (Siaciwena & O'Rourke, 2000). Distance learning is more open and subject to scrutiny than education in a formal classroom, which is especially beneficial when there are questions concerning teacher motivation and attitudes to pastoralism. Distance learning is consistently accessible in contrast with primary schools, where teacher absenteeism is a significant problem.

6.10.2 Challenges Associated With Implementation of a Distance Learning Programme

A major challenge of utilising distance learning in a largely illiterate and mobile community, is trying to achieve basic literacy with limited face-to-face contact. In a more literate environment, achieving basic literacy is easier as support and assistance is routinely available from within the family or wider community. While there is evidence that radio broadcasts and supported study groups work relatively effectively in post-literate and neo-literate mobile communities (Robinson, 1997; Pennells & Ezeomah, 2000), there is scant evidence that this success will transfer to illiterate learners in a largely illiterate environment. Some authors have suggested that the solution is to combine distance learning with short periods of residential schooling during seasons of reduced mobility (Carr-Hill & Peart, 2005). However, the integration of residential schooling seems to reintroduce some of the barriers to enrolment and attendance that are characteristic of school-based education. An alternative strategy for the achievement of basic literacy could be built on endogenous educational innovations of Orma pastoralists described in the current study. The fieldwork data shows that Orma community nurseries are a successful innovation (in terms of enrolment, attendance and gender parity) in the absence of state provided pre-school education.

Supporting communities by building on their own adaptations and innovations offers a better chance of success, both because communities are often best placed to assess constraints to their livelihoods and because of the sense of ownership which encourages sustained community participation (Pennells & Ezeomah, 2000). Orma nurseries are taught by local school-leavers who parents know and trust. There is very low teacher absenteeism and limited motivation for the teacher to abandon the nursery to move to town as they lack the qualifications to find similar work there. The standard of teaching is accordingly basic, and a very teacher-centered, rote approach to teaching and learning is utilised (Aikman & El Haj, 2006), which reflects teachers' own experiences of schooling. Nursery teachers are able to learn and improve 'on the job' in response to the learners' enthusiasm and achievement

with different approaches. Orma nurseries are mobile and in a similar way to *imams* the teachers are often trying to build their own herd as part of a diversified livelihood strategy. They consequently share the same livestock related concerns as the wider community.

If a distance learning programme incorporated support for community nurseries in order to achieve basic literacy before commencing the formal distance learning programme, the chances of success would be enhanced. In terms of cost, local school leavers who are struggling to find employment are more than willing to work as a teacher for modest rates of pay. Most are from a poor background, and many do not see nursery teaching as a long term occupation, Many school leavers view it as a way of furthering their own education, or building their herd. In this sense, the use of local school leavers would not only offer a cost effective way of bridging the 'literacy gap' to facilitate successful engagement with the distance learning programme but would also offer gainful employment to unemployed school-leavers as a way for them to further their own education and or build a viable pastoralist livelihood.

6.10.3 External Support of Community Nurseries as Part of a Programme of Distance Learning in Kenya

One of the major problems with delivering education to pastoralist communities is teacher motivation (Carr-Hill & Peart, 2005). Despite problems of qualified teacher availability, it is commonly recognised that, ideally, teachers should be from the same background as the learners. The small number of pastoralists that have completed secondary schooling are generally disinclined to live with mobile communities, preferring to look for employment in urban areas, which they have become accustomed to over many years, during the completion of their schooling (Aikman & El Haj, 2006; MOEST, 1999). This has resulted in the need for strategies to attract qualified teachers to ASALs from other areas. Retention rates of these teachers is usually poor. In order to incentivise commitment on the part of these externally-sourced teachers, several policy measures have been deployed. In Kenya,

since 2001, there has been a 'hardship allowance' for teachers serving in ASALs (calculated at 30 percent of basic allowance with an additional travel expense supplement). In 2004 a new policy was adopted by the Teachers Service Commission (TSC)[85] which required that teachers remain in post for a minimum of 5 years, or relinquish the right to teach in Kenya's public school system (Ruto *et al.* 2009). It is hard to envisage that this kind of coercion will result in satisfactory levels of motivation and teaching quality and is more likely to foster resentment towards the community. In Nigeria, the National Commission for Nomadic Education (NCNE) utilised a more progressive strategy, whereby teacher trainees were drawn from the pastoralist community and had to return to teach their own community as part of their contract with the state (FFE, 2006). There are also examples from Sudan under the 'Darfur Mobile Multi-Grade Model' in which local teachers were recruited despite their lack of qualifications rather than 'working with fully trained teachers who have to be enticed into the schools and find it hard to adjust to the mobile way of life' (Aikman & El Haj, 2006 p.203).

6.10.4 Challenges Associated With Distance Learning

The status and symbolic nature of school-based education can constrain interest in alternative educational approaches. Distance learning is often regarded by parents and government ministries as an inferior education system (Yates, 2000), which is 'used to offer a shadow of education while withholding its substance' (Perraton, 2000 p.101). To some degree the symbolic nature of education received in a school is borne of indoctrination concerning what legitimate and valuable education looks like. To a large extent it also reflects the special societal status achieved by school graduates, and the perceived unique role of school qualifications in securing employment. The perception of alternative educational approaches as inferior will persist as long as formal schooling remains the only route to income generating opportunities and social status (Carr-Hill & Peart, 2005). The key to addressing this

[85] The TSC is a semi-autonomous government agency and is mandated with teacher management. All teachers serving in public schools are hired by the TSC.

issue is a focus on the issue of 'equivalence' of qualifications achieved through distance learning programmes, with those available from school-based education.

A young person who possesses a distance learning education not regarded with parity by society or the labour market, is not in an enviable position. Such a scenario can only be avoided by addressing equivalence and integration early in the design of a distance learning programme. The legal framework for educational provision in Kenya is contained in the Education Act (1968 revised 1980). Within this outdated Act every official 'school' able to issue certificates of graduation must have a permanent structure and plot number. Therefore, distance learning programmes and community nurseries cannot be registered under the current provisions. The result of the long overdue revision of the Act is that the Ministry of Education relies on *ad hoc* policy formulations to guide practise (Ruto *et al.* 2009). Under the current policy, transition to secondary education based on qualifications gained in a distance learning programme remains problematic (Swift, 2010). Until distance learning qualifications are officially recognised as equivalent, little progress is likely in changing the symbolic superiority of school-based provision in the minds of pastoralists (Krätli, 2000). Many programmes, particularly those started with external funding, fail to give adequate consideration during the pilot stage to the issues of integration and institutionalisation within the wider national educational structure (Dock & Helwig, 1999). Actively involving national ministries as early as possible will maximise the chances of official recognition, accreditation and equivalence for any alternative educational programmes.

6.10.5 Cost and Funding Issues

Securing adequate and on-going funding is one of the major challenges in implementing a nationwide programme of distance learning for mobile pastoralists. Assuming that a successful pilot programme is completed, there will be pressure from policy-makers to demonstrate the economic efficiency of the model to justify the cost of rolling out a national programme (Swift, 2010). The economic efficiency of distance learning is unknown due to a shortage of reliable information. Yates

(2000) presents a comparative costing of various distance learning programmes which suggests that both formal and informal out-of-school distance learning models deliver cost efficiency, when compared with school-based alternatives. Pennells and Ezeomah (2000) state that despite economies of scale associated with distance learning models, the cost of distance learning is often higher than anticipated. Start-up costs in particular are particularly high, although it is reasonable to expect that reaching the last 10-20 percent of out-of-school children will be relatively more expensive. Distance learning may offer a cheap option in this context (Krätli & Dyer, 2009). Distance learning models which avoid engagement with commercial radio infrastructures are better insulated against unforeseen costs. This was demonstrated in Kenya in 1999 when large-scale radio education programmes were adversely affected by the privatisation of airtime (Murphy *et al.* 2002). The community-radio model may offer the best option in the Kenyan context (Swift, 2010).

6.10.6 Education For Nomads (EFN) and Kenyan Policy

The Government of Kenya is in the process of establishing a National Commission for Nomadic Education in Kenya (NCONEK). Its role is to take a lead in the reform of pastoralist education policy in Kenya (SOS Sahel, 2010). As part of this new impetus (which resulted in the formation of the new ministry (MSDNKOAL) in 2008), the EFN team[86] has been working closely with the Government of Kenya, through both the Ministry of Education (MoE) and MSDNKOAL, to develop a specific strategy for extending EFA to all pastoralists in Kenya by 2015 (IIED, 2010). Based on research undertaken as part of Phase 1 of the National Strategy for Nomadic Education (NSNE) a draft policy paper has been produced (Swift, 2010) which outlines a distance learning programme for Kenyan drylands, which is broadly in-line with recommendations made in this thesis. Phase 2 of NSNE will involve basic research and pilot activities while phase 3 will comprises testing and scaling-up (Swift, 2010). The development of a distance learning programme targeted principally at pastoralists will require large and sustained political commitment. At

[86] The EFN programme run by the International Institute for Environment and Development (IIED) and comprises a number of partners with expertise on drylands development and education.

present such commitment exists and has resulted in the approval of the NSNE at the 2010 ministerial workshop in Nakuru. The demonstration of short-term successes offers the best chance to guarantee further funding to expand provision under the NSNE (Swift, 2010).

The approaching deadline for MDG 2 and 3 has raised the international profile of pastoralist education provision. Pastoralists' inclusion in EFA is of growing importance in many international and national institutional contexts due to the realisation that existing provision is structurally inadequate to achieve EFA by 2015. This has reignited interest in alternative forms of provision like 'distance learning' (Krätli & Dyer, 2009; UNESCO, 2006). The Government of Kenya's (2005) 'Vision 2030' sets out the target of 2015 for EFA, it also commits the government to providing extra financial support for alternative models of education provision in pastoral areas.

The Kenyan Government's expenditure on education is a comparatively large proportion of GDP, although GDP and GDP per capita has been falling for more than a decade (Otieno & Colclough, 2009). The percentage of recurrent expenditure on the education sector has, however, been growing (keeping the education budget roughly static in real terms). Overseas development assistance for education has declined over the last two decades and targeting has been shown to be poor (www.europa.eu). Policies associated with structural adjustment (and latterly poverty reduction strategy papers (PRSPs)), such as decentralisation, have the potential to enhance pastoral communities' access to services and participation in governance (Mattee & Shem, 2006). Decentralisation of local government can compromise capacity to raise tax revenues in ASAL districts. Devolution leads to a greater range of functions and services at the district level, thus potentially reducing available funds for public services. The NET effect of these policies on current and future investment in provision of education in ASALs is unknown and it remains to be seen whether funding commitments made under 'Vision 2030' will be realised. Education

provision in the drylands remains structurally inadequate, resulting in ASAL districts having some of the country's worst education performance indicators (Oxfam, 2009). Tana River District in particular is consistently at the very bottom of national education performance tables (in terms of primary school drop-out rates, survival to standard 5, primary completion, teacher student ratios, and KCPE exam results) (Ruto *et al.* 2009).

6.11 Conclusion

Very little reliable data exists on Orma pastoralist education (Oxfam, 2009), this chapter has presented detailed data on the enrolment of children in both state provided and community-based education systems. The role of education, knowledge and learning in Orma livelihoods has been examined through the characterisation of livelihood constraints, adaptations and innovations. Data were interpreted using the PLS framework, which was used to provide a coherent structure to the discussion of livelihood strategy dynamics. The PLS framework (incorporating the theory of asset threshold dynamics outlined in Chapter Four) makes a significant contribution to the body of theory for engaging with and analysing pastoral livelihoods by researchers and development practitioners.

Based on the data presented on community nurseries, it is argued that support for such endogenous innovations offers real promise for improving participation in formal education, and for addressing the vast gender disparities highlighted in the primary school enrolment data. The potential for the community nursery model to augment the proposed National Strategy for Nomadic Education (NSNE) shows significant promise in light of the weaknesses in the basic literacy element of the strategy, that have been highlighted above. The data on primary school enrolment and family mobility status offers support for work by Fratkin *et al.* (1999) and others, which casts doubt on the role of settlement in improving female enrolment. The data showed that both family settlement and household splitting led to comparatively small improvements in female enrolment in contrast with male children which, it is

hypothesised, is partially due to the significant increase in female work associated with both settlement and household splitting (Ensminger, 1984), in addition to other parental concerns regarding the appropriateness of a mixed-gender school environment. These trends make a strong argument for the potentially transformative role of a distance learning strategy in Tana River District, particularly for females.

The positive health effects of education on women and girls, in terms of reduced mortality, fertility and child mortality are well established (Caldwell, 1979; Brass & Jolly, 1993; Dow *et al.* 1994). For this reason (and the extant gender disparities), initiatives designed to increase the participation of girls, rather than to increase participation generally, are required if Kenya is to achieve gender parity in education provision to its pastoralist communities (Leggett, 2005). As Krätli (2000) observes, the high numbers of girls participating in non-formal and alternative forms of education provision suggests that the issue of girls' school drop-out is more likely explained by the structure of the school system than by parents' ideological aversion to educating girls. This study lends weight to this argument as Orma parents have been shown to enrol their daughters in community nursery schools in unprecedented numbers.

Chapter Seven-
Land Rights, Climate Change and Policy

7.1 Introduction

Having focused throughout this thesis on adaptations and innovations in response to the direct and indirect constraints to Orma livelihoods, the final chapter addresses a number of outstanding issues that respondents regarded to be of key importance to the continued viability of their livelihoods. They can be grouped into two themes: land rights and climate change. The impact of these two themes on Orma livelihoods, is mediated by both national and international policies which are addressed at various points in the chapter.

Chapters Four, Five, and Six established the central argument of this thesis: the importance of various forms of mobility to the Orma production system, and the ways in which provision of services has the capacity to support or constrain Orma livelihoods, particularly for the least wealthy families. The role of infrastructures in defining livelihood diversification opportunities and engagement with the wider economy has also been emphasised. However, sufficient access to land is the foundation of a successful pastoral production system, without these fundamental resources the level of external inputs required to sustain pastoral populations would be prohibitive. This chapter will look at the diverse nature of the threats to Orma land access before going on to analyse the likely effects of climate change in East Africa. Finally, the chapter examines respondent perceptions of climate change and other

trends, and their impact on livelihood decision-making. This analysis informs the identification of a number of promising focus points for development support.

7.2 Pastoralist Land Expropriation

The expansion of farming and settlement has pushed pastoralists, hunters and wildlife out of the most productive grazing lands over the last few centuries (Reid *et al.* 2007). Roughly 35-50 percent of the wetter (semi-arid and dry sub-humid) areas of former grazing lands are now ploughed for irrigated and rainfed crops (MEA, 2005; Kloos, 1982; Taddesse & Peden 2005; Mwangi, 2006). Over 10 percent of East Africa's land area is protected within national parks, game reserves, and other conservation areas (Reid *et al.* 2004). In Kenya the loss of grazing lands has accelerated since the 1960s due to land privatisation, population growth and the creation of protected areas (Galaty, 1992; Campbell, 1984). Nearly 92 percent of the land annexed as national parks and reserves, and over 50 percent of the forest reserves are found in the drylands (Barrow & Mogaka, 2007). Many of these expropriated lands are pastoralist dry season grazing reserves, which generally have higher levels of biomass production or more permanent water sources than surrounding areas. In the longer term, the existence of dry season grazing reserves and key resource areas underwrite the pastoral production system over vast areas, acting as an insurance policy in extreme drought years.

Compromising access to these key resources can have devastating effects in the event of drought (Illius & O'Connor, 2000). Pastoral resource use is not only sporadic but notoriously difficult to quantify and map, which leaves pastoral rangelands open to expropriation (McGahey, 2008). The true utility of these key resource areas to the pastoral system may be hard to appreciate for land-use planners who do not understand the significance of pastoral mobility. Sale and lease of land by the Government of Kenya is made on the basis of token Environmental Impact Assessments (EIAs), which exclude local communities (Nature Kenya, 2008). The situation is made worse by the marginalisation of pastoralist communities and their

poor representation within national policy frameworks, which limits their ability to contest their exclusion from grazing lands.

There is provision in international human rights law for arguing that access to natural resources upon which livelihoods depend should be formalised into a set of 'rights'. The International Covenant on Economic, Social and Cultural Rights is the principle legal instrument that establishes the human right to food. Under the auspices of this covenant there have been clarifications and interpretations made by the Committee on Economic, Social and Cultural Rights, which oversees the monitoring and implementation of the covenant. These clarifications and interpretations (issued as 'General Comments' and 'Voluntary Guidelines') seek to advance implementation of the human right to food. They make the link between pastoralists' access to land, and food security. They highlight state obligations to protect pastoralists' access to productive resources. The 2004 Voluntary Guidelines (FAO, 2005) were negotiated and agreed by member states with the involvement of human rights organisations. They serve advocacy groups as one avenue through which to lobby government to support pastoralist communities' land rights (Ask, 2006).

7.3 Land Expropriation in Tana River District

There is currently a high profile legal case between Orma pastoralists[87] and the Kenyan Government concerning the expropriation of 40,000 hectares of land for lease to Mumias Sugar for the purposes of bio-ethanol production from mono-cropped sugarcane. Before exploring this case study in more depth, it is worth looking at the history of expropriation of grazing lands in Tana River District in order to establish a longer-term perspective on the basis for current constraints to mobility and the decline in resource access described over the course of the previous chapters.

[87] The Orma and a number of other minority ethnic groups are financially supported in the case by the Royal Society for the Protection of Birds and BirdLife International. Local opposition is coordinated by Nature Kenya.

The first major state appropriation of Orma grazing lands occurred in the 1930s when the Orma had temporarily retreated northward in response to a rinderpest epidemic (Kelly, 1986). The colonial government designated the grazing territory as 'unoccupied' and annexed the area now known as Tsavo Game Park. During the same period, Galana Game and Ranching Scheme was founded. Galana Ranch remains the largest in Kenya at 690,000 hectares (Kelly, 1986). More recently Kora National Reserve, Arawal Nature Reserve, and Tana River Primate Reserve have been established on former Orma grazing lands. There have also been a number of irrigation projects (Hola and Bura Irrigation Schemes and the Tana Delta Rice Project), which have been enthusiastically funded by the Kenyan Government, the World Bank and other international development partners, all of which have been unmitigated failures and have excluded Orma pastoralists from almost 30,000 hectares of their most strategically important grazing areas (De Leuw, 1985; Johansson, 1991; tanadelta.org).

> *"A bad drought came in 1984 and we migrated to Kungu* [Tsavo-East]. *We had to pay 30 cows to KWS* [Kenya Wildlife Service] *soldiers to be allowed to graze".*
>
> Respondent 87- Low Wealth

> *"We are not permitted to graze in the national park. A long time ago we used to give shoats to graze there- now they* [KWS] *just want money".*
>
> Respondent 138- High Wealth

7.3.1 Current and Proposed Land Expropriation in Tana River District

Data presented in Chapter Four illustrated the importance of the area in and around the Tana Delta, known as *chaffa* to Orma pastoralists. During the 1984/85 drought, 56.3 percent of respondents took their herds to *chaffa* while 21.9 percent took their herds into Tsavo-East National Park (this necessitated the payment of bribes to KWS). Nunow (2010) reported that during the 2009 drought, livestock numbers in Tana Delta swelled to over 3 million heads, which emphasises the continuing importance of these resources to Orma pastoralists.

"Chaffa is the best area of Ormaland- it is like our savings account"

Respondent 47- High Wealth

"If there was another big drought I would take the heads to chaffa and leave someone here [Tiltila] *with the sheep and goats"*

Respondent 54- High Wealth

Huge tracts of land within *chaffa* are being set aside for industrial scale farming of export crops, biofuels and mining of minerals. The proposed Mumias Sugar plantation[88] was supported by the Tana and Athi Rivers Development Authority (TARDA) and was initially approved based on a superficial environmental impact assessment (EIA) which was carried out by HVA International (2007) for the National Environment Management Authority (NEMA). There was widespread concern and anger among Orma pastoralists when the proposed project was made public in 2007. This resulted in a number of public protests (see figures 7.1, 7.2 and 7.3 below). With the support of a number of international NGOs, a consortium of Orma pastoralists and other ethnic groups opposed to the biofuel project were successful in getting a court injunction to halt work on the project pending a more thorough consultation and environmental impact assessment.

[88] Officially referred to as the Tana Integrated Sugar Project (TISP)

Figure 7.1 Newspaper clipping from the Daily Nation (8th May 2008)

Figure 7.2 Newspaper clipping from the Daily Nation (8th May 2008)

Figure 7.3 BBC news coverage of the community legal challenge to the Mumias Sugar biofuel project (Anon. 18th July 2008)

In June 2009, Kenya's High Court ruled in favour of the developers and the Government began transfer of 40,000 hectares of land to the developer. More than 25,000 people living in 30 villages stand to be evicted from their land, while thousands more could be deprived of the use of the area as a grazing reserve in severe drought years. However, the High Court decision was appealed by lawyers representing the communities and the case is currently adjourned until May 2011. Over 100 people travelled overnight from Tana River to Nairobi to attend the hearing and stage a public protest. It is somewhat concerning that the critical legal and financial support offered to communities to contest the expropriation of their grazing lands comes exclusively from organisations whose primary concern is the well-being

of birds[89], despite the potentially disastrous human welfare consequences of the proposed project.

Undeterred by community protests against the Mumias Sugar Biofuel Project, a second sugar company, Mat International (a Kenyan company), is in the process of acquiring over 30,000 hectares of land in Tana Delta and another 90,000 hectares in adjacent districts, for the purposes of bio-ethanol production. A third company, Bedford Biofuels Incorporated (a Canadian multinational), is the process of acquiring 90,000 hectares to predominantly grow *Jatropha curcas* in Tana River District. A further 50,000 hectares have been earmarked for G4 Industries (a British company) who propose to cultivate crambe, castor and sunflower to generate biofuel in the Tana Delta. Biofuel projects and agribusiness are not the only threat to the livelihoods of the communities in Tana River District. Tiomin Resources Incorporated (a Canadian company) have applied for a license to extract titanium from Tana Delta sand dunes, while Flow Energy (an Australian Company) is currently applying for a license to explore for oil and gas reserves in the Delta. The Qatari Government is still rumored to be in negotiations with the Kenyan Government concerning the leasing of 40,000 hectares to grow food for export to the gulf state, in exchange for the development of a USD 2.4 billion port in nearby Lamu District (tanadelta.org). The case study presented in this chapter is therefore the 'tip of the iceberg' in terms of proposed land expropriation from communities in Tana River District.

7.4 'Land Grabs' and Biofuels

Global concern over the depletion of oil reserves, the rising price of oil, and the need to mitigate the effects of climate change, have contributed to a rapidly growing global interest in biofuels (McGahey, 2008). The global race to produce biofuels has been blamed for rising food prices and shortages, by diverting resources away from the cultivation of food crops. Studies by the World Bank (Mitchell, 2008a),

[89] The Delta is home to 350 species of birds, including the globally threatened Basra reed warbler and Tana River Cisticola, according to the UK's Royal Society for the Protection of Birds.

International Monetary Fund (IMF) (Johnston, 2007) and the Food and Agriculture Organisation of the UN (FAO, 2008), estimated that biofuels contributed to between 30-75 percent of the 140 percent increase in staple food prices between 2002 and 2008. UK aid agency Oxfam estimates that the push for biofuels has dragged more than 30 million people worldwide into poverty (Oxfam, 2008a). The 2007/08 food and commodity price spike, and the subsequent period of relatively high and volatile prices[90], contributed to a reassessment, on the part of import dependent countries, of their future food security. The ensuing scramble to secure agricultural land overseas led to renewed interest in the agricultural sector by a range of commercial and government investors (Deininger, 2011). Large-scale acquisitions of land in Africa, Latin America, Central Asia and Southeast Asia have made headlines in a deluge of media reports across the world (Cotula *et al.* 2009). Acquisitions have been dominated by foreign investment, although the significant role of domestic investors has received far less media attention thus far.

International food security concerns and the expansion of biofuel production are the two dominant motivations for 'land grabs'. While biofuels are expected to contribute to satisfying the growing energy demands of developing countries[91], the present interest in biofuel production comes overwhelmingly from western nations (McGahey, 2008). This burgeoning interest partially reflects the enforcement of the Kyoto Protocol (2005) and the increasing implementation of biofuel targets (Molony & Smith, 2011). In 2007 the US legislated that 36 billion gallons of renewable fuels should be incorporated into the national transport fuel supply by 2022, only a fraction of which can be produced domestically (UNCTAD, 2008). The EU reduced its bioenergy target to 10 percent of transport fuels by 2020 when it became apparent that no more than 5 percent could be produced domestically (UNCTAD, 2008). EU and US legislators came under pressure to revise bioenergy targets in light of

[90] Increasing population, urbanisation rates and changing diets are also pushing up global food demand (Cotula *et al.* 2009).

[91] Von Braun and Pachauri (2006) estimate that three quarters of the expected 71 percent increase in global energy demand between 2003 and 2030 will come from developing nations.

widespread concern for global food security and increasing links between biofuel production and rising global food prices (Rosenthal, 2011).

Although Kenya has only recently started to participate in the biofuels boom, it has laid the foundation for significant future production. The government has enacted policies (e.g. Sessional Paper, No. 4 of 2004) and legislation (the Energy Act, No. 12 of 2006) that prioritises the development of ethanol and biodiesel. The Ministry of Energy has developed a biodiesel strategy through its National Biofuels Committee. The Kenya Biodiesel Association was formed with support from all sectors of the biofuels industry (GTZ, 2008). While leasing and sale of land for export crop and biofuel production has the potential to provide macro-level benefits (such as growth in GDP and government revenues, job creation and infrastructure development), there is also evidence that such expropriation of land results in local communities losing access to resources on which they depend for their food security (Cotula *et al.* 2009). This is of particular relevance in countries that face food security challenges. The reality for pastoralists is that their grazing lands are often considered 'wastelands', devoid of sustained economic use (Hesse & Odhiambo, 2006) and are thus a prime target for prospecting investors. In 2008 the EU's biofuel policy was amended such that its commitment to protecting permanent grassland from biofuel production was significantly weakened, effectively raising the global threat to pastoral grazing lands (Ernsting, 2008). Many developing countries lack legal and procedural mechanisms to protect local rights, while lack of contract transparency and independent impact assessments invite high level corruption (Cotula *et al.* 2009). There has been relatively little research on the potential threat of land expropriation to pastoralism, but such research is essential if informed discussion and advocacy are to take place (McGahey, 2008).

7.5 Resource Competition and Resource Management Institutions

Having examined the process of large-scale expropriation of land from pastoralists in Africa and described the current challenges to pastoral land use in Tana River

District. This section will focus on the smaller-scale and more gradual processes of loss of resource access. The Government of Kenya has nationalised all common land which effectively prohibits the military defense of resources from rival user groups. This is enforced by state security forces[92], which are a feared and growing presence in remote pastoral areas of Kenya. The consequence of the increasing enforcement of liberalised land access in Tana River District has been the progressive encroachment of both rival pastoralist ethnic groups and absentee herd owners, on Orma grazing lands.

The process of liberalisation of access to grazing lands in Kenya has contributed to the decline of authority of local resource management institutions, which can lead to damaging exploitation of resources by groups uncertain of their long-term resource access (e.g. increased tree cutting). The provision of 'public' wells and boreholes in dryland areas of the Sahel is breaking down water point tenure systems in a similar manner (Thébaud, 1993). By insisting that all citizens have equal rights to national resources, the state is undermining local resource management institutions without replacing them with a viable alternative (Scoones, 1995; Moorehead, 1981). The inevitable tensions that arise between rival user groups competing for resource access outside a functional institutional framework has led to heightened levels of conflict. Violent conflict associated with resource competition is described as 'traditional violence' in the national media (Walsh, 2007), avoiding the more complex and controversial issues stemming from lack of investment and support for local resource management institutions in the drylands.

The boundaries created by the colonial Government which resulted in designated grazing areas for both Somali and Orma were adhered to until relatively recently (Aguilar, 1993; Ensminger 1992). Intrusions of Somali pastoralists into Orma controlled grazing areas began with the droughts of the 1980s, and has continued until the present. The encroachment of Somali and Wardei pastoralists undermines

[92] The General Service Unit (GSU) are the main state military presence in Tana River District.

Orma resource management institutions, as it becomes difficult to regulate *laf sera*, dry season grazing reserves, well-ownership and tree cutting. When the Orma do attempt to impose their control over resources by force, the situation can escalate rapidly, particularly because many Somali pastoralists migrating from the border region with war-torn Somalia are comparatively well armed and habituated to armed conflict (Ensminger, 1992). Kenya has absorbed more immigrants than any other East African country with the number of Somali increasing from 246,000 to 419,000 over a period of twenty years (Carr-Hill & Peart, 2005). Respondents also reported wealthy Somali herd owners paying bribes to local chiefs so that their presence in an area, and their digging of wells is officially legitimised. The hiring of unemployed Orma *makalas* by absentee Somali herd-owners presents a particularly problematic form of resource appropriation. Somali herd owners often pay more than double what Orma pastoralists pay (one heifer per year) for herding. Unemployed *makalas* are not blamed for taking advantage of this relatively lucrative form of employment in the context of an almost total lack of alternative opportunities. However, the Orma are aware that this form of resource access represents a progressive loss of grazing lands by stealth. Recent clashes with Wardei pastoralists over control of grazing areas were on-going at the time of the fieldwork with several deaths on both sides of the conflict.

The influx of Somali and Wardei pastoralists into Orma grazing areas has resulted in efforts on the part of the Orma pastoralists to consolidate their position by appealing to mainstream notions of legitimate land use. In order to legitimise their tenure claims in the eyes of any arbitrating authority, respondents reported the establishment of settlements in areas perceived to be vulnerable to incursions by other ethnic groups. In some instances, pastoralists in Tanzania and Kenya have resorted to cultivating land for the sole purpose of staking a claim to ownership (IIED, 2009). This trend of decreasing mobility in response to insecure land tenure has been observed in Tana River District for almost twenty years (Ensminger, 1992), and offers further insight into the constraints on mobility discussed in Chapter Four.

7.6 Formalised but Flexible: The Paradox of Pastoral Land Tenure

It has been established in this chapter that insecure pastoral land tenure can jeopardise sustainable resource management practises, increase conflict between competing groups, undermine pastoralists in contesting large-scale expropriation of land, and constrain mobility in a number of ways (Cotula *et al.* 2006; Faye, 2008; Lo & Dione, 2000; Toulmin & Quan, 2000). Despite the damaging consequences of insecure pastoral land tenure, very little progress has been made in legitimising pastoralist usage rights or supporting local resource management institutions. Aside from problems of political marginalisation, lack of investment, and a vested-interest in insecure pastoral land tenure among political elites, the 'paradox of pastoral land tenure' (Fernández-Giménez, 2002) makes formalising pastoral land tenure a significant challenge. The paradox refers to the need for both secure and formalised but also flexible tenure arrangements to accommodate pastoral mobility.

The 'off-the-shelf' solution to insecure land tenure has often been to establish fixed boundaries, with access rules granted to specific groups or individuals (Ostrom, 1990; Bromley, 1992). In the pastoral context, this logic (derived from the 'tragedy of the commons' theory) has resulted in a number of ranching interventions, notably the creation of Maasai 'group ranches' in Kenya in the 1980s which have been largely unsustainable (Galaty, 1994). More recently, government support for land sub-division and titling in semi-arid districts such as Kajiado and Narok have had largely negative results due to restrictions on mobility at key times of the year (Kameri-Mbote, 2002). Superficial studies on the productivity of such ranching and privatisation schemes may show improvements in the condition of livestock, but fail to show when these have been gained at the expense of the surrounding common areas (Cousins, 1987). By building on the considerable levels of social capital (Galvin *et al*. 2007) and the tradition of reciprocity and negotiation among pastoralist communities (Ahmedou, 1997), ways of managing land which do not depend on fixed exclusionary measures offer a more promising approach to securing sustainable

resource access (Turner, 1999a). Ensuring an appropriate legal and procedural mechanism that allows continual revision and update of resource use rules (to reflect the process of negotiation between neighbouring groups) is not an easy task (Niamir-Fuller, 1999). Just as important as clearly defined rules of resource access, is a robust and locally legitimate process with which to adjudicate competing claims (Cotula *et al.* 2006). There is a danger that by formalising local resource management institutions, resource users would be bound into an overly static structure (Niamir-Fuller, 1999), limiting their adaptive capacity. A characteristic that will become increasingly important as pastoral societies stratify and resource competition intensifies due to loss of grazing land and climate change. Formalising or legally recognising institutions that seek to manage resources at the landscape-scale requires new ways of thinking (Galvin *et al.* 2007). Pastoral production systems move across territories controlled by different groups, passing through customary, fixed administrative and national boundaries. Most of the major pastoral groups in East Africa move across national borders[93], which can undermine their national identity in the eyes of the state.

As has been emphasised throughout this thesis, enhancing productivity and minimising herd losses by tracking the non-uniform distribution of nutrients on the range is fundamental to the pastoral production system. Increasing the spatial scale of resource use is a very effective way of reducing risk and enhancing productivity in an arid environment. Accepting these key insights necessitates a commitment to landscape level resource access mechanisms in tandem with ensuring secure tenure in pastoralists' 'home areas'. The Economic Community of West African States (ECOWAS) has pioneered the creation of International Transhumance Certificates (ITC) which facilitate cross-border mobility between the sixteen ECOWAS member states (Hesse & Cavanna, 2010). The certificate also ensures the health of the migrating herd and ensures 'host communities' are aware and supportive of the

[93] Afar pastoralists move between Ethiopia, Eritrea, and Djibouti; Somalis between Ethiopia, Djibouti, Somaliland, Somalia, and Kenya; Borana between Ethiopia and Kenya; and the 'Karamoja cluster' between Kenya, Uganda, and Sudan (Morton *et al.* 2007).

migration. The Common Market for East and West Africa (COMESA) also has plans to introduce a livestock 'green card' to facilitate cross-border migration of livestock based on ECOWAS transhumance certificates (Hesse & Cavanna, 2010). There are significant challenges ahead in putting these policies into practise but they have the potential to reinvigorate traditional reciprocal arrangements benefitting all participating communities.

Source: Hesse and Cavanna, 2010

Figure 7.4 ECOWAS International Transhumance Certificate

7.7 National Policies and Initiatives Supporting Pastoralism

7.7.1 Decentralisation

Since the mid-nineties, the process of government decentralisation in Kenya has the potential to facilitate a more active involvement in resource allocation and policy making by pastoralist communities (ALive, 2006). The new Kenyan constitution (GoK, 2010a) will create the National Land Commission, which as well as offering some hope to mitigate the rapid process of land expropriation in Tana Delta, will advance the institutional framework for devolution of authority for resource management. State support for a decentralised institutional system also provides a more accessible forum to negotiate management of natural resources and resolve

competing claims (Galvin *et al.* 2007). This devolution of responsibility for the management of local resources and the provision of services to local government bodies in Ethiopia, Tanzania, Niger, Sudan, Burkina Faso, and more recently Kenya, has laid the foundation for participation of pastoral communities in decision-making processes that affect their lives (Hesse & Cavanna, 2010). Economic liberalisation as well as democratic reform drives decentralisation in natural resource governance (Mortimore *et al.* 2009). However, processes of political change are always negotiated, and disruption to the *status quo* can be met with resistance by some state interests, particularly those who have a financial or political stake in maintenance of centralised control of resources (see Meynen & Doornbos (2005), for a discussion of this resistance in an Indian context). Providing that devolved decision-making bodies are truly representative and the over-arching institutional framework supports the authority of the devolved government bodies, then resource access rights can be strengthened and local resource management institutions can be given legal recognition (Mortimore *et al.* 2009). Local institutions are better placed to govern resource management and plan service provision (Spicer, 1999) as they are adapted to the local environmental, socio-cultural and political context (Vogt & Vogt, 2000) as opposed to the top-down 'one size fits all' approach of centrally planned services and land managment regulations.

Despite the opportunities for consolidating local democracy and improving accountability (Oxfam, 2006b), decentralisation also has the potential to jeopardise the position of marginalised groups (such as women and youth) who are not well represented in local power structures. Localised decision-making can create new opportunities for rent seeking and resource grabbing by local elites (Djiré, 2007; Mortimore *et al.* 2009). In Sudan, for example, the process of decentralisation has left education services in pastoral districts with even less resources with which to provide education and other public services (Aikman & El Haj, 2006). When central governments devolve the financing of services and infrastructure to the district level in pastoralist areas, the ability of local governement to raise revenue through taxation

is often very weak (Oxfam, 2005; UNESCO, 2010). Within the Kenyan Government's unitary budget system, a broad range of mechanisms are used to support decentralised spending. However, national poverty reduction funds are allocated with little regard for poverty levels. A case in point is the Kenyan Government's Constituency Development Fund. Established in 2003, it allocates 3.5 percent of government revenue (Oxfam, 2008b), although under the current allocation formula, district poverty levels are weighted at only 25 percent of overall allocation criteria, behind such general criteria as district population size. Core Poverty Programmes (currently allocated roughly 7 percent of total planned government expenditure) are another source of government funding for poverty alleviation projects in Kenya, but they have been heavily criticised, based on low levels of disbursement, limited transparency, and financing of programmes with tenuous links to poverty alleviation (World Bank, 2009). Because these centrally allocated poverty reduction funds are not effectively targetted at marginal or deprived areas, decentralisation has the potential to reduce overall funds available to local government, despite the fact that overcoming marginalisation is likely to require higher levels of per capita spending (UNESCO, 2010).

7.7.2 Ministry of State for Development of Northern Kenya and Other Arid Lands (MSDNKOAL)

Prior to the formation of the new ministry, policies aimed at reducing the vulnerability of the dryland communities to drought were coordinated by the Department of Land Reclamation under the Ministry of Water and Irrigation, while the implementation of these policies was done through a sectoral approach under several line ministries. This structure and the comparatively low levels of investment resulted in disjointed and short term programmes (Orindi *et al.* 2008). A more coherent strategy for drylands policy in Kenya has been discussed in parliament since 2005 but it was not until the current coalition government that concrete steps were taken towards the formation of a dedicated drylands ministry (Watkins & Mwangi, 2009). A rare unity of purpose was afforded by the coalition between the Party of National Unity (PNU) and the Orange Democratic Movement (ODM) as a

result of the 2007 elections. The effect of this was that key decision-makers, usually on opposite sides of the political divide, were keen to make visible positive steps forwards (Ruto *et al.* 2009). In 2008 MSDNKAL was established and the Arid Lands Resource Management Project II (ALRMP II) now falls under the ministry's control. Thus far the ministry has appended a specific drylands policy to Vision 2030 and its interim strategy focuses on making progress towards achievement of the Millennium Development Goals (MDGs) partly through the formation of a National Commission for Nomadic Education in Kenya (NACONEK) (in partnership with the Ministry of Education) (MSDNKAL, 2008). However, as UNESCO (2010) made clear in its recent assessment, 'the problem is that the new ministry has a broad mandate with an insufficient budget'. For 2009/2010 the ministry was only allocated 0.5 percent of the government budget (UNESCO, 2010) which does not match the rhetoric of putting in place mechanisms to 'aggressively channel resources into arid and semi-arid lands' (Watkins & Mwangi, 2009).

7.7.3 Civil Society and Pastoral Voices

Civil society organisations (CSOs) in Kenya have rapidly grown in number over the past two decades. While there have been some legitimate concerns about the representativeness and leadership of CSOs (Scoones, 1995; Ruto *et al.* 2009), it is widely regarded that recent policy shifts in favour of dryland communities, and even the formation of MSDNKAL have been brought about in part by the advocacy work of NGOs and pastoral CSOs in Kenya (Ruto *et al.* 2009). The Kenya Pastoral Forum was successful during the 1990s, in raising the profile of pastoral advocacy, which with the support of the Centre for Minority Rights Development (CEMIRIDE), ALRMP II, and pastoralist parliamentarians (who have organised themselves into the Pastoralist Parliamentary Group (PPG)), resulted in the inclusion of drylands development into Kenya's Poverty Reduction Strategy Paper (PRSP) and the constitutional review (Alive, 2006). A similar process of advocacy by Pastoral Forum Ethiopia (PFE) resulted in the inclusion of drylands issues in the Ethiopian PRSP (Ask, 2006). The PPG has continued to act as a cohesive bloc in parliament and

pastoralist candidates for constituency elections are increasing. Since 2003 Kenya Pastoralist Week has been celebrated in Kenya and the collaboration of PPG, NGOs, CSOs and delegations of pastoralists from all over the country have had considerable success in raising public awareness of dryland issues and advocating for policy reform. There have also been more regional initiatives to enhance the voice of pastoralist groups. In 2007, the Segovia Declaration was tabled at the Convention to Combat Desertification (CCD) by the participants of the World Gathering of Nomadic and Transhumant Pastoralists. Identifying the loss of grazing lands to crops and biofuels as critical and growing concerns, pastoralists at the gathering called for recognition of common property rights and a raft of other reforms aimed at removing constraints to pastoralists adaptation to climate change (FAO, 2009).

Despite the significant progress made over the last few decades by pastoral advocacy groups, a more favourable policy environment has had very little effect on pastoral poverty (FAO, 2009). Hesse and Odhiambo (2006) regard the absence of a representative and effective civil society movement in Kenya as one of the key factors explaining the continued failure of pastoral development policies. The disappointing initial allocation of funds to MSDNKOAL has dampened the optimism that surrounded the announcement of the new ministry. It is, however, too early to make any judgements regarding the likely impact of the new Education for Nomads initiative and other MSDNKOAL policies, until more details about the next round of funding are made public. Kenya's diverse pastoralist groups are not in a position to consolidate their voting power in the same way that their parliamentary counter-parts have done, partly due to the enmity between many of the constituent groups due to competition and conflict over the same resources. Due to the absence of any political unity between Kenya's pastoralist groups they have very little political capital. The lack of ability to influence national elections as a significant voting block prevents them from having a strong voice in national policy debates (Ask, 2006; Ruto *et al.* 2009).

As discussed in Chapters Five and Six, education can play an important role in political mobilisation to challenge government policy. The poor state of education provision in Tana River, even compared with other pastoralist areas (see table 5.1), has resulted in a lack of capacity to engage meaningfully in national policy debates. There is a certain degree of 'catch 22' in the *status quo.* A strong political voice with which to champion the economic contribution of pastoralism, and contest the lack of investment in infrastructure and services, is required in order to secure increased public investment in services like education. However, without a critical mass of educated Orma pastoralists to raise the profile of these issues in parliament, such a voice will remain inaudible to key decision-makers.

An innovative project aimed at 'short-circuiting' the catch 22 scenario described above, is IIED's Pastoral Trainings Programme which brings together policy-makers, development practitioners, and pastoralists for a sustained period of mutual learning. For the first week, pastoralists and their leaders are assisted in expressing the complexity and constraints to their livelihood system in 'development' language while building their communication skills and confidence. During the second week, policy-makers and development practitioners join the discussion and explain some of the constraints they face in addressing development in pastoralist areas. The training programme was initially developed in French for use in Senegal[94] and subsequently adapted to eastern Africa by IIED, Resources Conflict Institute (RECONCILE), and the Training Centre for Development Cooperation (MS-TCDC) and Tufts University. The training is now being delivered in French, English, Pulaar and Kiswahili by a range of organisations in East and West Africa (Hesse & Cavanna, 2010).

The Pastoral Training Programme aims to build capacity in institutions involved in drylands development so that decision-makers can make more informed choices based on pastoralists' own vision of development. Academic papers and publications from NGOs and development institutions have been extolling the economic,

[94] The first pastoral training programme was developed in French by Dr. Brigitte Thébaud, then the Pulaar version was developed by Associates in Research and Education for Development (ARED).

environmental and social virtues of pastoralism in an informed way for many years now, but this knowledge has been slow to influence perceptions among policy-makers in Africa. With very few exceptions, formal training programmes in Africa in livestock production and range management have been established and taught by people with a strong bias for western models (based on carrying capacity and tragedy of the commons theory), this bias has resulted in generations of technical specialists who perceive pastoral production goals as irrational and pastoralism as something to be replaced (Scoones, 1995). Changing the perceptions of policy-makers and policy implementors is subject to the slow pace of change in higher education institutions. The Pastoral Trainings Programme therefore seeks to cut out this time-lag in getting new understandings of pastoral systems into policy and practise, while building the capacity of pastoral groups to understand, engage with, and ultimately contest the overarching policy framework regulating their livelihood system.

To address some of the same goals as the Pastoral Trainings Programme IIED has launched a new MA programme[95] with several partner institutions[96], aimed at East African dryland policy-makers and practitioners. The MA programme seeks to address many of the same issues as the Pastoral Trainings Programme in that it aims to build capacity in government ministries, NGOs and CSOs to facilitate their more effective engagement with drylands development.

7.8 Climate Change Impacts

Placing undue emphasis on the role of climate change in pastoral impoverishment has the potential to obscure pre-existing structural inequalities which are the result of discriminatory government policies and chronic under-investment going back to colonial times. Failure to address these more fundamental issues will undermine efforts to facilitate climate change adaptation in the drylands. Climate change is

[95] This author has an on-going involvement in the design and implementation of the 'Drylands Policy and Climate Change Adaptation' MA course.

[96] Kimmage Development Studies Centre (Republic of Ireland), Sokoine University of Agriculture (Tanzania), the University of Nairobi (Kenya), and the University of Mekelle (Ethiopia).

rarely the reason that pastoralists fall into poverty; instead, it interacts with and exacerbates existing constraints (Magrath, 2008; ODI, 2009b). This thesis has attempted to engage with the principle constraints faced by Orma pastoralists in pursuit of their livelihoods, from the perspective of the respondents themselves. During the fieldwork, the changing climate was discussed spontaneously by older Orma men in response to questions about a range of themes from crop harvests to household mobility.

> *"We can't recognise even the soil- it has changed- there were only kone trees here before and full of grass"*
>
> Respondent 87- Low Wealth

> *"When I was a makala I migrated with my father. I lived with the gosse* (cattle camp) *and moved almost every day in the rains. In the dry season people stayed by Galole* (Galole River). *The life of that time and this time is very different. That time there was more rain, fathers didn't sell heads- in the dry season they had some milk, some fruits, some wild animals, and hampayu* (tree sap). *Now it is too dry to live as before"*
>
> Respondent 77- Low Wealth

> *"I can see changes whereby life is getting harder- there is less livestock. I used to take milk from one wet season until the other. Now I only take milk during the wet season"*
>
> Respondent 104- High Wealth

While not wanting to discredit the quotes above (which typify Orma views of the effects of climatic change), nor cast doubt on the very real impacts of climate change (particularly for East Africa[97]), it is important to emphasise the point that climate change and the persistence of human institutional or cultural memory occur at different time-scales (Walker & Abel, 2002). These overlapping time-scales mean that respondent testimony about changes in 'slow variables' (Walker & Abel, 2002) may refer to 'climatic variability' as opposed to the more permanent shifts associated

[97] IPCC general circulation models have greater convergence in their projections for East Africa than almost any other region of the world (IIED, 2009).

with ‘climate change’. Making climatic observations and identifying trends within the length of a human generation is problematic if permanent climatic shifts are extrapolated. A case in point is the widely reported ‘desertification’ of the Sahel (UNEP, 1984) and subsequent ‘re-greening’ (Tucker *et al.* 1991; Ecklundh & Olsson, 2003; Olsson *et al.* 2005; Herrmann *et al.* 2005; Helldén & Tottrup, 2009).

This section builds on Chapter Two which outlined some of the broader implications of climate science for the drylands. Many of the constraints faced by Orma pastoralists that have been discussed in the previous chapters are intimately interconnected with the effects of climate change. Mobility in particular will be a key feature of pastoralists capacity to adapt to climate change (IIED & SOS Sahel, 2008). With increasing climatic variability, pastoral mobility and the need to establish secure but flexible land use arrangements will become increasingly important. This section will explore downscale climate change predictions and the potential for climate science to facilitate adaptation and provide appropriate foci for development interventions.

7.8.1 Climate Predictions For Kenya

For East Africa, the IPCC (2007) predicts a temperature increase of around 1^{o}C by 2020 compared with the average temperature between 1961-1990. The temperature is predicted to increase to 3^{o}C by the 2080s. More rain is predicted to fall in both the short (October-December) and long (March-May) rains over much of Kenya and Uganda as soon as the 2020s. The short rains are anticipated to nearly double by the end of the century. Predictions of this kind are potentially useful for targeting support for development and climate change adaptation in the drylands. However, despite the unparalleled level of agreement between the 21 general circulation models (GCMs) for the east african region (Oxfam, 2008b; IIED, 2009), the accuracy of the IPCC predictions have been called into question by a growing number of studies focusing on the effects of sea surface temperatures (SSTs) in the Indian Ocean (as part of a phenomenon referred to as La Niña).

The IGAD[98] Climate Prediction Applications Center (ICPAC) which provides downscaled climate predictions to the Kenya Food Security Technical Working Group[99] has been basing predictions on the persistence of La Niña conditions through the 2011 long rains, which is a cause for serious concern because eastern Kenya will have experienced two consecutive drought seasons. If these predictions are correct this would jeopardise the current recovery process, and potentially signal a return to the heightened food insecurity that prevailed prior to October 2009 (FEWS-Net, 2010). A recent study by Williams and Funk (2011) shows that increased Indian Ocean SSTs appear likely to continue to strongly modulate the Warm Pool circulation, reducing precipitation in eastern Africa, which runs contrary to IPCC (2007) predictions. Based on a trend towards greatly increased convection and precipitation over the tropical Indian Ocean, the study suggests that the westward extension of the western, ascending branch of the Walker circulation will continue to suppress convection over tropical eastern Africa, decreasing precipitation during the long-rains season (Williams & Funk, 2011). This predicted trend towards drought contrasts with IPCC (2007) projections of increased rainfall in East Africa and more 'El Niño-like' conditions globally.

These contrasting projections do not support effective targeting of climate change adaptation although improvements in downscale predictions for East Africa can be expected (IIED, 2009) as recent climatic phenomenon are incorporated into the IPCC's fifth assessment report (due in 2014). Figure 7.5 illustrates Kenyan rainfall levels from March to June from 1900 until 2009 alongside SST indexes. These patterns may represent the initial indications that a climate change trend is beginning to emerge, although additional data is required to confirm this (Williams & Funk, 2010).

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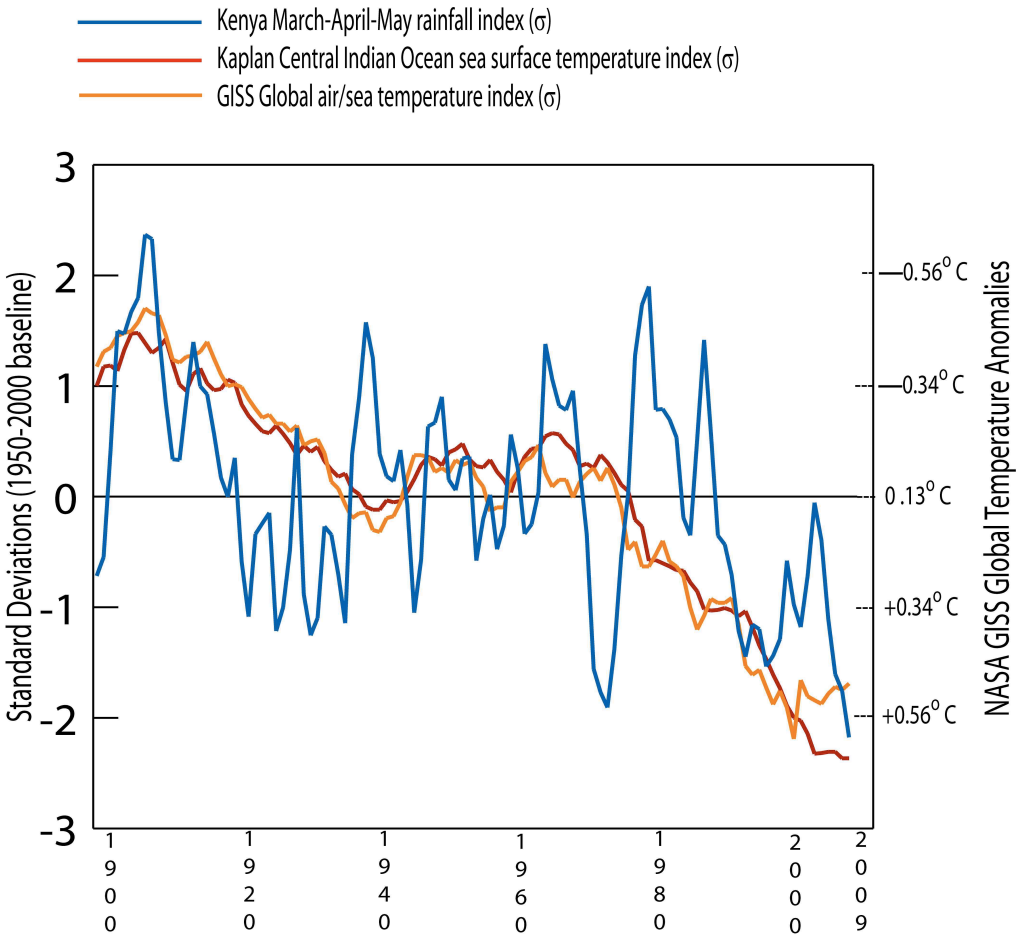
[98] The Intergovernmental Authority on Development (IGAD) in Eastern Africa was created in 1996 to supersede the Intergovernmental Authority on Drought and Development (IGADD).

[99] The Kenya Food Security Technical Working Group is comprised of the World Food Programme, US-AID (FEWS-Net), the Ministry of Agriculture and the Arid Land Resource Management Project II, and provides technical support to the Kenya Food Security Steering Group (KFSSG) in planning humanitarian relief.



Source: *Earthzine.org* (2011)

Figure 7.5 Potential Emergent Climatic Trends in Kenya

7.8.2 Impacts on Pastoralists

Climate change will undoubtedly have significant impacts on pastoralists. There are, however, important knowledge gaps on what forms these impacts will take (not least because of the uncertainties surrounding climate projections discussed above) and what can be done to support pastoralists in adapting to them (Morton, 2008). Both increasing and decreasing rainfall scenarios, both with heightened variability and diminished predictability, will offer a range of challenges and opportunities to pastoral communities. The net effect of these changes will hinge on the level and quality of resource access, service provision and social capital, and their role in facilitating or constraining pastoral mobility, equitable engagement with the market,

and livelihood resilience. The parallels between the livelihood thresholds discussed in Chapter Four and the role of thresholds in climatic transitions (Alley *et al.* 2003) both resonate in different ways with the concept of resilience (Gunderson & Holling, 2002; Walker *et al.* 2004) which can buffer the process of adaptation if it becomes a focus for development interventions.

Thus far, the discussion of climate change impacts on pastoral communities has been dominated almost exclusively by the anticipation of more frequent and extreme climatic events like droughts and flooding. Some authors (Pelling, 2010) have attempted to rebalance the discussion by arguing that the huge mobilisation of resources to fund climate change adaptation should be seen as an opportunity to challenge existing marginalisation and unequal relationships. The capacity for pastoralists to adapt to more extreme variability and the other potential effects of climate change has been subject to a certain degree of polarisation in the literature (Morton, 2008; Robinson & Berkes, 2010). More optimistic interpretations posit that pastoralists are best placed to capitalise on elevated variability as they have done for millennia, subject to policy constraints being removed (Krätli & Schareika, 2010; Scoones & Devereux, 2006; Nori & Davies, 2007; Oxfam, 2008; ODI, 2009b). It is also anticipated that pastoral management strategies and their animal genetic resources will become regarded as increasingly valuable in the context of elevated environmental variability. Other more gloomy assessments regard climate change as a potential death knell for pastoralism which has had its productive resource base eroded over many decades (Sandford, 2006; FAO, 2009).

7.8.3 Pastoralism and Climate Change Mitigation

In assessing the net contribution of the livestock sector to greenhouse gas (GHG) emissions, FAO's widely-cited (2007) report, 'Livestock's Long Shadow' found livestock to be responsible for 18 percent of total emissions measured in CO_2 equivalent. Many authors have criticised the methods used to calculate this data (e.g. Köhler-Rollefson & Brehm, 2007; Hesse & Cavanna, 2010) which are based on the aggregation of pastoral production with more intensive and 'landless' production

systems, which rely on considerable external inputs. Intensive livestock production systems frequently confer very few environmental benefits while necessitating environmentally damaging practises, such as deforestation to grow soya beans for livestock feed, and high fossil fuel transportation costs (Pimentel, 1997; Thornton & Hererro, 2010). In addition to the relatively low environmental impact of pastoral production systems compared with other forms of livestock production, conversion of grazing lands for crop production is a major cause of emissions (Searchinger *et al.* 2008). Conversion typically results in loss of 95 percent and 60 percent of above and below-ground carbon respectively (Reid *et al.* 2004; Guo & Gifford, 2000). The degradation of above-ground vegetation causes an estimated loss of 6 tonnes of carbon per hectare and soil degradation processes lead to a loss of 13 tonnes of carbon per hectare (Woomer *et al.* 2004).

There is consequently now increasing interest in exploiting the potential role of pastoralism in mitigating the impacts of climate change globally through sustainable management of Africa's 13 million km^2 of grasslands (Reid *et al.* 2004). Grasslands store approximately 34 percent of the global stock of CO_2 , a service estimated by Costanza *et al.* (1997) to be worth $7 USD per hectare. Such valuations are somewhat speculative, based on the fluctuations of global carbon markets (Feng *et al.* 2011) and the lack of any credible mechanism for remunerating rural communities. However, payments for ecosystem services do offer significant promise in simultaneously addressing climate change and rural poverty. As discussed in Chapter Two, there are multiple additional environmental benefits associated with pastoral production beyond its role in carbon sequestration. Pastoralism limits soil erosion and bush encroachment, enhances water storage, nutrient cycling, seed dispersal, and radiation absorption (IIED, 2009; Hooft, 2009). It is compatible with tourism (in Kenya, tourism accounts for 13 percent of GDP (Hatfield & Davies, 2006)), and represents an efficient use of resources compared with alternative forms of livestock production (Pimentel, 1997).

7.8.4 The Use of Climate Projections by Pastoralists

The drought Early Warning System (EWS) in operation in Kenya's drylands is arguably one of the most technically sophisticated in Sub-Saharan Africa (Nyangada *et al.* 2005). The weak link in the wider mechanism for mitigating the effects of droughts and floods is the translation of early warning alerts into early resource mobilisation and effective communication with potentially affected communities. While improvements have been undertaken (Oxfam, 2006a) there remains a gulf between investment and expertise in the technical aspects of EWS and effective implementation. As more accurate downscaled climate projections become available it will be imperative that this same disjuncture between information and action is not replicated. There is a need for studies into both the willingness of pastoralists to utilise weather and climate[100] forecast data, and the communication and implementation of mitigation strategies (Orindi *et al.* 2008; Morton, 2008). There has been conflicting reports on the willingness of rural communities to utilise seasonal forecasts. While Cooper *et al.* (2008) demonstrated that farmers in semi-arid East Africa were willing to significantly change their production strategies if provided with reliable seasonal forecasts, a study by the pastoral risk management project (PARIMA) found that pastoralists are more likely to prioritise word of mouth concerning realised rainfall and grazing conditions (Barrett, 2001). However, this does not discount the use of climate seasonal forecasts by pastoralists in tandem with traditional forecasting practises if accuracy and timeliness of information improves (Oxfam, 2008).

Initiatives such as the Climate Outlook Forums (COFs), which have been organised annually since 1998 by ICPAC and the Kenya Meteorological Department (KMD) focus on providing climate data to rural communities to focus adaptation activities (Orindi *et al.* 2008). The participation of pastoral communities in COFs has been disappointing as there is significant potential for the scientific community to better

[100] Weather and climate are differentiated by time-scale. Weather refers to the condition of the atmosphere over a short period of time, and climate is how the atmosphere "behaves" over relatively long periods of time (NASA.gov 2011).

focus their efforts based on the requirements and traditional knowledge of pastoralists. As well as adapting to the primary effects of climate change, pastoralists will be faced with a host of secondary effects such as shifts in the prevalence of particular human and livestock diseases (Jennings, 2007) and human and livestock migration based on differentiated regional effects of climate change. The most recent Kenya Food Security Outlook Update (KFSOU, 2010) predicted pastoral migration from Somalia to Kenya at the start of 2011 based on more severe La Niña effects being predicted in Somalia. Anticipating these kinds of secondary impacts offers the opportunity to mobilise resources and facilitate dialogue such that migrations are tolerated by host communities and reciprocal arrangements are supported by trans-national community land-use agreements discussed above.

7.8.5 Supporting Autonomous Adaptation[101]

Although this section focuses on climate change adaptation, many of the principles apply equally to the on-going process of adaptation to a changing social, economic, cultural and political context by dryland communities. Throughout this thesis several processes of innovation by Orma pastoralists have been identified. The use of polygamy to facilitate household splitting to access education (and other static services) while continuing to move with their herds, is a process that facilitates adaptive capacity through maintenance of mobility. Likewise, the formation of community-based nursery schools allows children (particularly girls) to begin school earlier without compromising the household production system. Such strategies have the potential to form a significant focus for adaptation support. It has been demonstrated that interventions based on successful endogenous innovation are more likely to produce sustainable positive outcomes (Oxfam, 2007). It is likely that Kenya's Draft Nomadic Education Policy (Swift, 2010) will retain a strong distance and open-learning element when it is formalised into policy and reaches the implementation stage. If this is the case then Orma household splitting may gradually become redundant, but through understanding such innovations the importance of

[101] Autonomous adaptation refers to the measures taken by people at local levels to ameliorate and even benefit from the effects of increased climate variability and climate change.

constraints to household mobility through static education provision, can be demonstrated empirically and used to advocate for the importance of appropriate service provision to marginalised groups.

Evidence presented in Chapter Four, for the relatively recent transition among Orma respondents to camel keeping because of the increasing frequency of droughts, highlights another potentially fruitful avenue for adaptation support. This is particularly true in view of climate data which, over the last few decades, has documented a trend towards the expansion of shrublands and woodlands into grasslands and savannas in many places across the globe (Skarpe, 1991; Archer, 1994; Scholes & Archer, 1997; Van Auken, 2000). It is believed that this trend has been exacerbated by anthropogenic carbon dioxide emissions and nitrogen pollution which favors C3 plants (Archer *et al.* 1995; Van Auken, 2000; Bond *et al.* 2003; Asner *et al.* 2004). A trend towards more woody (C3) plants makes grazing less suitable for cattle and sheep (who prefer grass) and more suitable for camels and goats (who prefer to browse woody plants) (Reid *et al.* 2007). While adaptation support for existing processes of innovation are an important focus for development support, it is also vital to understand and support the exploitation of new opportunities that emerge as climatic, economic and political contexts evolve (Pretty, 2002).

Institutional change emerges from various social groups working to establish institutional arrangements that best suit their interests (Galvin *et al.* 2007). The governance of change will be an important theme in climate change adaptation in African drylands and more broadly, because change is never neutral, political change in particular must be negotiated. If the inevitable process of change is to be equitable, new forms of institutional governance which embrace landscape level planning are required. If 'social resilience' (incorporating concepts of social capital and livelihood thresholds) is defined as 'the ability of groups and individuals to tolerate and respond to changes through adaptive strategies' (Bradley & Grainger, 2004), then supporting

social resilience through facilitating and supporting autonomous adaptation must be an important element of any successful pastoral development in a fast changing world.

7.8.6 Harnessing International Mechanisms to Support Pastoral Adaptation, or Carbon Trading Gone Mad?

Carbon markets can be conceptualised as a marketplace for international public goods, or a form of payment for ecosystem services. Carbon emission markets are set to expand to €107 billion this year from €93 billion in 2010, as European power producers buy more permits before they are forced to pay at auctions starting in 2013 (Bloomberg, 2011). Access to global carbon markets by pastoralists is being promoted as a 'win-win' strategy, mitigating climate change through sustainable ecosystem management while creating a new source of income (Mortimore *et al.* 2009). However, as currently configured, carbon markets exclude rangelands from carbon schemes (Tennigkeit & Wilkes, 2008). One of the environmental ironies in Tana River District is that the Mumias Sugar Irrigation Project discussed above, will benefit from a Ksh 1.6 billion deal with Japan Carbon Finance Ltd. and has become the first company in Kenya to sell carbon credits[102] (Business Daily, 2010; GoK, 2010a). Such payments are intended to off-set carbon emissions in more developed countries by supporting renewable energy production and sustainable environmental stewardship (Delbosc & Perthuis, 2009).

The severe environmental degradation and damage to local livelihoods (based on Nature Kenya's (2008) cost-benefit analysis) caused by the expropriation of 40,000 hectares of a key resource area for the mono-cropping of sugarcane to produce bioethanol, represents a stark example of the non-articulation between international/ national climate change policy and local impacts. Subsidising the scheme under the Kyoto Protocol's Clean Development Mechanism underlines this policy incoherence between scales, whereby short-term local effects are at odds with longer-term

[102] Properly referred to as Certified Emission Reduction (CER) credits under the Kyoto Protocol's Clean Development Mechanism (CDM).

international goals. The consequences of the lack of political commitment of more developed countries to meet their emission reduction targets, impacts directly on some of the most impoverished and marginalised groups in the world. Political elites rush through superficial EIAs (Nature Kenya, 2008) in order to sell lucrative carbon credits for environmentally damaging agribusiness that undermines the capacity of pastoralists, who depend on these key resource areas in extreme drought years, to adapt successfully to climate change. The perversity of the situation in Tana River District is compounded by the fact that the principal organisation objecting to the proposed irrigation scheme is primarily concerned with the welfare of rare birds.

An alternative use of the considerable global funds available for purchase of carbon credits under carbon off-set (or so called 'cap and trade') climate change mitigation schemes, is investment in projects to protect ecosystem services. In the drylands, an alternative mitigation approach to subsidising 'biofuel land grabs', would be providing support for sustainable land use systems which enhance carbon sequestration and support rural communities. Wilkes (2008) showed that in the Tibetan Plateau, if pastoralists could enhance carbon sequestration by as little as 0.5tC/ha/year, then each household would be eligible to receive payments of over $7000 per year at prevailing carbon prices. This represents more than double the average herder's annual income. The scope for these kinds of community sequestration projects is immense due to the vast extent of rangelands and savannas throughout the less developed world (FAO, 2009).

7.9 Conclusion

Through an examination of some of the potential threats to the livelihoods of Orma pastoralists in Tana River District, this chapter has highlighted the disjuncture between international policies to address climate change, and the local impact of those policies. This 'disjuncture' between rhetoric and reality, can persist because negative impacts typically manifest at the local scale in politically disenfranchised and economically marginalised communities. The implementation of climate change

policy is mediated by the market, therefore concerns over environmental externalities and humanitarian impacts are often sidelined by powerful elites with a financial stake in agribusiness and biofuels. The wealthiest nations continue to off-set their carbon emissions by contracting out 'green' energy production. Crucially, the assessment of externalities involved (both humanitarian and environmental) in the production of 'green' energy is also contracted out[103], which results in politically expedient EIA assessments (e.g. HVA International's (2007) EIA of the Mumias Sugar Biofuel Project) and perfunctory participation by local communities. There is clearly a case to be made for a standardised international process with which to assess the eligibility of renewable energy projects for the Kyoto Protocol's Clean Development Mechanism[104] (Huq, 2002). As currently structured, carbon markets serve only to prolong an unsustainable model of development, while contributing to the destruction of the resource base on which rural communities depend. It is these very communities who are the ultimate losers in processes of mitigation mediated by international carbon markets. The irony is that many expect the areas where communities are under most pressure from biofuel land expropriation (the drylands) to be among the first to experience the effects of climate change (IIED, 2009; Oxfam, 2008; Nori & Davies, 2007). Dryland communities were also severely affected by the 2007/08 food and commodity price spike, widely regarded to be due to the global shift to biofuel production (Smith, 2010). Dryland communities can therefore be regarded to be on the 'frontline' of climate change in more ways than one.

This chapter contributes to the literature on the combined effects or 'double exposure' of rural communities to the effects of globalisation and climate change (O'Brien & Leichenko, 2000; Sanchez, 2000; Richards, 2003; Smith, 2010). In the

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[103] CDM projects are approved and registered by the UNFCCC Secretariat and the emissions reductions are verified by an independent entity (Delbosc & Perthuis, 2009). The environmental and humanitarian impacts of CDM projects are subject to no such scrutiny (Huq, 2002).

[104] Under the Kyoto Protocol, both Joint Implementation (JI) and Clean Development Mechanism (CDM) projects generate GHG Emission Reduction Units (ERUs) for the most developed nations through funding 'green energy' projects abroad.

context of Tana River, these two issues are inextricably linked, both in the inherent contradiction in international climate change mitigation policies (whereby policies to prevent poverty and food insecurity in the future, cause poverty and food insecurity in the present) and through the impact of biofuel production on global food prices which impact most on the poor. This occurs both through direct competition with food production and through global markets. Studies by the World Bank (Mitchell, 2008a), International Monetary Fund (IMF) (Johnston, 2007) and the Food and Agriculture Organisation of the UN (FAO, 2008) estimated the contribution of biofuel production to the increase in staple food prices[105] to range from 30 to 75 percent[106] (Smith, 2010).

The climate accounting on which carbon markets are based has been shown to exclude the carbon cost of land-use conversion. This has severely biased the assessment of biofuels as an appropriate land use system in the drylands. Conversion of pastoralist grazing areas to biofuel production and irrigated agriculture jeopardises the vast carbon sequestration (grasslands store approximately 34 percent of the global stock of CO_2) and other ecosystem services supported by pastoral communities through their sustainable management of their grazing lands. Even without taking into account the humanitarian externalities of land use changes, the accounting errors inherent in global carbon markets suggest that a radical reassessment of climate accounting is required if the true value of biofuels in mitigating climate change is to be understood (Searchinger *et al.* 2008; Fargione *et al.* 2008; Searchinger *et al.* 2009).

The international institutional structure to apportion value to ecosystem services and environmentally damaging activities is in its infancy. Carbon markets can be interpreted as the first tentative steps to incorporate ecosystem services into the

[105] Staple food prices rose an average of 140 percent between 2002-2008 (Smith, 2010).

[106] A World Bank study (Mitchell, 2008b) was leaked in The Guardian (July, 2008) which reported a 75 percent contribution of biofuels to the food price increases as opposed to the 65 percent reported in the official document (Mitchell, 2008a).

capitalist model. Globalisation and climate change have significantly diminished the sovereignty of nation states as the constraints faced by local communities increasingly have global dimensions. Anthropogenic climate effects faced by pastoralists are not caused by the state nor can they be addressed by the state. This is not to obviate state responsibility in providing support for adaptation, and to address marginalisation and under-investment, rather it is to highlight the global component of problems faced in Africa's drylands and the imperative for international support for communities on the 'front-line' of a global process. Meeting EU and US emissions targets (Prakash, 2008) through use of carbon-offset schemes will be a profoundly hollow achievement if it comes at the cost of unlocking of vast amounts of soil carbon and undermining livelihoods which provide food security to some of the most impoverished communities in the world.

Chapter Eight- Conclusion

8.0 Introduction

The position of pastoralists peoples in Africa is characterised by social, political and economic marginalisation (IIED, 2006; Mortimore *et al.* 2009), weak land tenure (Cotula *et al.* 2004), and declining per capita livestock holdings (Lybbert *et al.* 2004; Reid *et al.* 2007), while their shrinking grazing lands are widely regarded to be on the front line of climate change both in terms of climate impacts (IIED, 2009; Oxfam, 2008) and biofuel/ agribusiness land pressure (Cotula *et al.* 2009). Pastoralists constitute some of the most impoverished communities in the world (MEA, 2005; Little *et al.* 2001; Oxfam, 2005) with some of the most poorly provisioned infrastructures and public services of any group in Africa (Oxfam, 2009). In both Oxfam's (2009) draft *Report on the State of Pastoralism* and the Ministry of State for Development of Northern Kenya and Other Arid Lands (MSDNKOAL) *Draft Policy for Nomadic Education in Kenya* (Swift, 2010), the dearth of good quality data on pastoralist populations and their livelihoods is cited as one of the fundamental barriers to improving the effectiveness of development interventions in the drylands. This study seeks to address these knowledge gaps for Orma pastoralists living in Tana River District, while contributing to the body of theory on pastoralist livelihood dynamics and decision-making.

In this concluding chapter, the central findings and contributions to knowledge contained within the thesis will be summarised. The study is based on a prolonged

period of fieldwork with Galole Orma families around Tiltila, Waldena and Kalalani over a period of 9 months in 2007 and 2008[107]. A semi-structured interview methodology was supplemented with key informant interviews and extensive participant observation. As much as possible, the focus of the study was not pre-determined prior to engagement with communities. Despite the necessity to submit a detailed fieldwork proposal, space for modification and adaptation was retained such that the focus of the study could be sufficiently redefined to reflect the issues and constraints of most relevance to local people. As a result of this approach, a central focus of this thesis is the role of both household and herd mobility in the livelihoods of Orma pastoralists living in Tana River District. The constraints, adaptations and innovations which impact on a family's ability to maintain mobility while accessing key public services was examined with reference to the empirical data.

8.1 Mobility

Until recently, pastoral mobility was largely regarded as 'reactive' or 'passive', whereby pastoralists roam to find pasture once it is exhausted in their current location. Increasingly, however, mobility is understood in terms of pastoralists' active and skilful targeting of transient grazing patches of peak nutrient content and digestibility (Krätli, 2008). Research on plant phenology has demonstrated the transience of above ground protein and nutrient concentrations in ephemeral dryland plants following rainfall. The spatially and temporally dispersed rainfall patterns typical of the drylands, allow pastoralists to harness environmental variability to enhance productivity and reduce risk. It is this highly skilful management strategy which explains the vastly superior production of pastoralist systems in comparison to alternative livestock production systems in Africa's drylands (for Kenya, (*cf.* Western, 1982); for Ethiopia, (*cf.* Cossins, 1985); for Botswana (*cf.* De Ridder & Wagenar, 1984), and for Zimbabwe (*cf.* Barnett, 1992).

[107] The only significant period of disengagement from the field (for more than a few weeks) occurred following the presidential elections at the end of 2007 and ensuing post-election crisis, which continued until the 28th of february 2008 when the PNU-ODM power sharing agreement was signed.

A simple typology of household mobility (mobile, split, and settled) based on long-term family mobility patterns[108] was utilised to understand the range of livelihood strategies employed by respondents. Families were also categorised based on wealth, using a community-based wealth ranking exercise. Combining 'mobile' and 'split' families, 51 percent of respondents migrated regularly, and 88.5 percent supplemented household mobility with the use of cattle camps at some point during the year. Permanent settlement was strongly correlated with family wealth status, whereby 67.2 percent of low wealth families were permanently settled, compared with 31.6 percent of high wealth families. The most frequent migrations take place in what the Orma regard as the 'short rains' (March-May). Orma cattle camps were found to have a greater range of movement than mobile households (averaging 92km and 45km respectively, based on the previous three years movements), as well as moving more frequently.

As well as compromising production, respondents suggested that settlement reduced livestock fertility and health, while increasing the risk of herd loss in particularly dry or wet years. This relationship has been well established for other pastoralist groups (Fratkin *et al.* 1999). Human health is also compromised by household settlement (Nathan *et al.* 1996; Campbell *et al.* 1999; Shell-Duncan & Obiero, 2000). Using under 5 child mortality[109] as a proxy for respondent health status showed that both reduced household mobility and lower wealth status, were strongly correlated with significantly higher levels of child mortality. Mobile families had an under five mortality rate of 88.2, which is by far the lowest rate for any wealth or mobility sub-group. The fact that it is so much lower than the high wealth families' rate of 115.8 suggests that while wealth does improve child survival (through better access to food and healthcare), household mobility also plays a significant role in improving child survival (through a more nutritious milk-based diet and lower prevalence of

[108] Errors in categorisation due to the fluid nature of mobility status across seasons and between years, were reduced by use of a multi-year assessment and by the existence of asset thresholds which serve to stabilise household asset holdings (Lybbert *et al.* 2004).

[109] Data was collected from 83 women who gave birth to a total of 555 live children.

communicable diseases etc). The high levels of ill-health and mortality among low wealth and settled pastoral families emphasises the inadequacy of state of health services, which constitutes one of the many constraints to the on-going success of pastoralism in Tana River District.

The three principal reasons cited for settlement were education (53.2 percent), herd loss (43.0 percent), and old age/illness (25.3 percent). Despite education being most frequently cited by respondents as their motivation for settling, on closer questioning it frequently emerged that a significant loss of livestock had preceded the decision to settle to access education. In this sense, it was felt by the author that during the interviews respondents preferred to highlight a positive or active reason for settlement rather than a negative or reactive motivation. This feeling was borne out by the fact that 73.7 percent of respondents stated that regardless of school they would remobilise if they had sufficient livestock. Of the 26.3 percent who, regardless of herd size, did not wish to remobilise, old age, illness or elderly relatives were often mentioned. By establishing a time-line for the 'permanent'[110] settlement of respondents, significant episodes of permanent settlement were shown to correlate with major climatic events (particularly the 1984/85 drought and 1997 El Niño floods).

8.2 Education

Respondents had a total of 1027 children of which 367 were primary school age at the time of the interviews. Of these children, 28.2 percent of females and 43.5 percent of males were enrolled[111] in primary school. However, primary school completion rates in Tana River District are so low that these enrolment figures may give an unduly optimistic picture of actual educational participation because they do not reflect attendance. This is particularly true for mobile families whereby attendance is highly variable according to environmental conditions. For all wealth

[110] 'Permanent settlement' includes short migrations for reasons of sanitation etc.

[111] All enrolment figures discussed in this chapter refer to gross enrolment rates.

categories, primary enrolment was higher for settled families, which indicates that factors associated with mobility are limiting both children's enrolment and attendance.

8.2.1 Female Education and Innovation

Despite low current enrolment rates (particularly for females), the enrolment rates of previous generations was considerably lower. Only 6.1 percent of respondents' first wives had attended school. It is suggested here that the rapid rate of increase in female enrolment is unlikely to be sustained through current provision, due to the exhaustion of surplus female household labour supply, and the significant increase in female labour burden associated with settlement[112]. This theory is supported by data presented in Chapter Six, whereby female enrolment by settled families is only marginally higher than for mobile families, which contrasts with significantly higher enrolment of male children in settled families.

Community nursery schools represent a relatively recent (and thus far undocumented) endogenous innovation that is organised and funded by groups of parents. Community nurseries can move with families as they migrate, and schedules are flexible and structured to fit with pastoral livelihoods. Lessons are taught in Kiorma by teachers selected from the growing pool of unemployed Orma primary school leavers. There are nurseries in Kalalani, Waldena, Haboye/Kotu, El Watcho, Doke, and Tiltila, while two additional nurseries (in Anabu and Ongola) were in the process of being established during the fieldwork. One of the great strengths of community nursery schools is that they address many of the parental concerns associated with the enrolment of children in primary school. Long unaccompanied walks to school and the cultural appropriateness of a mixed gender school environment supervised and taught by a non-Orma teacher, are circumvented completely by the community nursery model. Many of these constraints apply

[112] Based on data for Orma pastoralists, Ensminger (1992) calculated the increase of female work associated with settlement to be as much as 13 times.

disproportionately to female children which may explain the female enrolment improvements observed in community nurseries.

The enrolment of female children in community nurseries significantly extends the average duration of educational participation, and sets up a more successful engagement with primary education. Compared with primary enrolment rates (28.2 percent female, 43.5 percent male), improvements in female enrolment and gender parity in community nursery schools (46.3 percent female, 52.8 percent male) have been impressive. The 100 KSh per child monthly enrolment fee was cited by low wealth respondents as constraining the enrolment of their children. This suggests a low cost option for government support of a successful educational innovation. Participation in community education by both genders can be expected to improve further as the community nursery model is adopted by other groups/villages in the area. This data supports Krätli's (2000 p.29) observation that:

> "The high numbers of girls within non-formal education programmes […] suggests that the issue of girls' school drop-out is more likely to be explained by the structure of the school system rather than by parents' aversion to educating girls"

The data therefore contributes to an emergent body of literature concerning the factors affecting enrolment of female pastoralists (Dall, 1993; Roth, 1991; Dyer and Choksi, 1997; Abu-Saad *et al*. 1998; Fratkin *et al*. 1999; Krätli, 2000; Krätli & Dyer, 2010). In contrast to the positive influence of community nursery schools on female education, data presented in Chapter Six highlights the growing trend of 'household splitting' and its negative affects on female education. Household splitting allows wealthier families to access the benefits of settled life (including static services) while still maintaining household mobility to subsist from their livestock. The data shows that split families have lower female enrolment than mobile families across all wealth categories, which is in contrast to observed increased in male enrolment associated with household splitting. It is hypothesised here that the unexpected drop in female enrolment associated with house splitting is related to the large increase in

female work load associated with both settlement (Ensminger, 1992), and household splitting (whereby female work must be duplicated across locations, thus sacrificing economies of scale). Household splitting can therefore be regarded as a livelihood adaptation in response to the increasing importance of education and other public services, which somewhat perversely, compromises the participation of female children in education.

The data presented on female education among Orma pastoralists identifies constraints to improving enrolment under current provision modalities, as well as highlighting endogenous innovations that have significant potential for enhancing female participation in education. The success of community nurseries also emphasises the lack of ideological opposition to the education of females among Orma pastoralists, and offers some support for the potential efficacy of a distance learning programme in improving female educational participation. The health effects of female education in terms of reduced mortality, fertility, and child mortality (Caldwell, 1979; Brass & Jolly, 1993; Dow *et al.* 1994) and the current gulf in formal educational participation between female and male children, suggests that the draft strategy for nomadic education in Kenya should target initiatives designed to support the participation of girls through minimising the key constraints to enrolment and attendance identified by this study.

8.2.2 The Net Effect of Education in the Absence of Job Opportunities

The evidence that formal education boosts pastoral productivity is not well supported (Sarone, 1986; Holland, 1996; Demberel & Penn, 2006). Some isolated studies are emerging on the effects of education on pastoral poverty. Oxfam's draft *Report On The State Of Pastoralism* (2009) cites data from North Eastern Province in Kenya (adjacent to Tana River District), whereby households with no education had poverty levels of 62 percent and above, while those with primary education had a poverty level of 46 percent and above. These findings are inconsistent with data from the current study in which 40.2 percent of families headed by an uneducated adult were in the low wealth ranking, compared with 52.2 percent for families headed by an

educated adult. As a growing number of authors have observed (Arero, 2005; de Jongh & Steyn, 2006; Ruto *et al.* 2009; Krätli & Dyer, 2009), the lack of sufficient employment opportunities for standard 8 leavers is creating growing numbers of disillusioned and 'deskilled' pastoralist youth. The presence of employment opportunities in the drylands will play a significant role in determining whether skills and knowledge learned at school (sometimes at the expense of vocational training) can be put to productive use (Rao, 2006). Stimulating the non-pastoral economy in these areas, while sustaining the viability of pastoral livelihoods represents one of the central challenges in supporting the poorest sections of pastoralist societies.

8.2.3 Distance Education and Basic Literacy

The data on education presented in this thesis collectively points towards the potential value of a distance learning (DL) programme in Tana River District. Current education provision in the study area has been shown to constrain household mobility, restrict children's contribution to the household economy, compromise the enrolment of female children, and potentially deprive children of key vocational training (without replacing it with qualifications or skills on which to base a livelihood). The draft Kenyan education policy *Getting To The Hardest-To-Reach: A Strategy To Provide Education To Nomadic Communities In Kenya Through Distance Learning* (Swift, 2010) is extremely promising and addresses many of the constraints identified by this study. One area of concern within the draft national strategy however, is the basic literacy element. There is little evidence that DL programmes lend themselves to basic literacy education, whereas for post or neo-literate populations they have been shown to be highly effective (Yates, 2000). Based on the study data, Chapter Six outlined the potential for integration of the community nursery model, as a 'stepping-stone', into the basic literacy element of the proposed national DL strategy. It highlights the potential synergies associated with employing and training local primary school leavers (whose opportunity cost of employment is negligible) thus incorporating vital one-to-one support during the basic literacy element of the DL programme. It is argued here that this low cost amendment to the proposed DL strategy has the potential to significantly enhance its success in Tana

River District. In addition to concerns about the basic literacy element of the draft policy, inadequate funding of MSDNKOAL with respect to its broad mandate (UNESCO, 2010), has the potential to compromise the quality of the distance learning programme and its contribution to the achievement of Millennium Development Goal 3 in Kenya's drylands.

8.3 Pastoral Livelihood Dynamics

The Pastoral Livelihood Strategy Framework adapts a simple livelihood typology from earlier work by Dorward *et al.* (2009)[113], and integrates it with a theory of pastoral asset threshold dynamics based on the empirical study data. An analysis of how respondent livelihood strategies were related to livestock wealth and mobility patterns, suggested the existence of significant threshold dynamics which influence asset accumulation and decumulation patterns over-time. The PLS framework was developed to organise and define a range of threshold dynamics which take hold at various critical asset levels (see figure 4.2). Asset thresholds are defined by household structure, size, and resilience[114]. More broadly, thresholds are influenced by external factors such as climatic processes and infrastructural development. Based on the importance of threshold dynamics in Orma livelihoods, the characterisation of 'threshold families' in a range of pastoral contexts is a promising entry point for engaging with pastoralist communities, as it defines a critical livelihood transition point. Understanding the role of negative feedback systems, which operate below the 'poverty threshold', is necessary in order to effectively focus interventions on minimising these feedback effects and making it easier to escape poverty traps (Barrett *et al.* 2007).

Families that are still mobile but below the 'subsistence threshold' represent a key focus point for external support because the impacts of investment have the potential

[113] The framework is a collaborative piece of work contributed to by this author (see Dorward *et al.* 2009).

[114] Resilience in this sense incorporates both internal factors (social capital, ability to engage in alternative income generating activities etc) and entitlements (i.e. access to key resources).

to produce sustainable benefits. This is not to neglect the responsibility of social protection for lower wealth families. Rather this analysis provides a set of criteria for focusing specific types of support where they are needed most (and are of most value). Policymakers and development programmers struggle to make sense of the complexity of pastoralist livelihoods. They lack conceptual frameworks that can help them to understand pastoralist systems and plan for them in a systematic way (Robinson & Berkes, 2010). The PLS framework therefore represents a potentially useful tool with which stakeholders in drylands development can more effectively interpret and engage with the complexity of pastoral livelihoods.

8.4 Food Aid and Endogenous Assistance

Food aid represents the principal mode of external investment of resources to support pastoralists in the drylands (Barrett & Maxwell, 2005). There is startlingly little empirical evidence on who benefits from these resources and what effects they have on pastoral livelihoods. The lack of empirical data is particularly stark in contrast with the firm consensus on the importance of targeting in the literature (Lentz & Barrett, 2008). Data presented in this thesis goes some way to illuminate the patterns of food aid allocation and the role food aid plays in supporting and constraining the livelihoods of different sections of Orma society.

The extensive redistribution of food aid undertaken by respondent communities resulted in unofficial transfers constituting 31.7 percent[115] of the total. Food aid was received by 99.1 percent of children from low wealth families, compared with 72.1 percent for families in the highest wealth category. Average amounts of per child monthly maize ration for low and high wealth families were 10.3 kg and 5.3 kg respectively. Despite the extent of these 'targeting errors' (or *leakage*), figures 4.6, 4.7 and 4.8 presented in Chapter Four, clearly demonstrate a coherent pattern of food aid distribution based on family wealth and number of children. The data on food aid

[115] This figure translates into a 'targeting effectiveness' of 0.68. Targeting effectiveness is defined by the WFP as "the ratio of included target population to the total target population minus the ratio of the included non-target population to the total population included".

targeting presented in this thesis suggests that it is doubtful whether community-based targeting and distribution (CBTD) can be improved without compromising the critical asset protection role of food aid for families around the poverty threshold.

Respondents and relief committees clearly undertake to distribute food aid more widely than prescribed by the World Food Programme (WFP) but still in a coherent way. Food aid allocation and percentage of eligible children receiving food aid is highest for low wealth households (see table 4.10). Targeting is more effective[116] and allocation more consistent for low wealth households, as indicated by the strength of the correlation (r = 0.7375) between food aid allocation and number of eligible children, and the angle of the line of best fit (see figure 4.6). Children of medium wealth households are less likely to receive food aid, have a smaller allocation (see table 4.10) and are less well targeted (r = 0.5633) (see figure 4.7), while high wealth household receive a 'token' allocation (r = -0.0061).

Two of the major factors compromising the effectiveness of food aid in fulfilling an asset protection role was the failure of food aid at critical times of the year, and the planned transition from General Food Distribution (GFD) to Food For Assets (FFA) under Kenya's current WFP Emergency Operation. While it was not possible to verify the annual pattern of food aid failure, the issue of road flooding after the long dry season was acknowledged to be a problem by the Kenya Red Cross (KRC) coordinator. This warrants further research due to the potential for seasonal food aid failure to act as a bottleneck to asset protection. Forced sale of livestock to purchase food can push families below key asset thresholds. Expansion of FFA will result in a loss of labour to the production system and the constraint of both household and herd mobility, as livestock keepers are compelled to engage in manual labour to secure access to food aid. While FFA projects have the advantage that they are self-targeting, the choice presented to families around the poverty threshold, is either exclusion from food aid or compromised livestock production. This may lead to

[116] In terms of the prescribed WFP beneficiary allocation.

removal of children from school to make-up the labour shortfall and will effectively raise the poverty threshold for families, potentially undermining their chance of rebuilding their herd. The constraint of mobility as a by-product of changes in WFP targeting practises is highly undesirable for recipients whose production system utilises mobility as the principle means of managing risk and enhancing production.

It is suggested here that the effects of food aid on households around the 'poverty threshold' are of key concern in assessing the efficacy of food aid in supporting pastoralist communities. Contrary to Barrett & Maxwell's (2005) claim that food aid generally forms a small part of total food consumption, average per child cereals allocation is 10.3 Kg per month for low wealth Orma households. In combination with WFP school and maternal health feeding programmes this can constitute a very significant component of total monthly household consumption. This suggests that while Barrett and Maxwell (2005) are correct to downplay the existence of food aid dependency, there is little basis to dismiss the existence of behavioural changes in response to food aid provision, which compromise, to some degree, a return to self-reliance on the part of long-term food aid recipients.

8.5 Land Access

Data presented in Chapter Four illustrated the importance of the area in and around the Tana Delta, (known as *chaffa)* to Orma pastoralists. During severe drought events, 56.3 percent of respondents reported taking their herds to *chaffa*. Nunow (2010) reported that during the 2009 drought, livestock numbers in Tana Delta swelled to over three million cattle. This emphasises the continuing importance of these resources to Orma pastoralists. As outlined in Chapter Seven, there is currently a high profile legal case between Orma pastoralists[117] and the Kenyan Government concerning the expropriation of 40,000 hectares of land in Tana Delta for lease to Mumias Sugar for the purposes of bioethanol production from mono-cropped

[117] The Orma and a number of other minority ethnic groups are financially supported in the case by the Royal Society for the Protection of Birds and BirdLife International. Local opposition is coordinated by Nature Kenya.

sugarcane. The severe environmental degradation and damage to local livelihoods (based on Nature Kenya's (2008) cost-benefit analysis, and qualitative data from the present study) that will be caused by the expropriation of 40,000 hectares of a key resource area, are not adequately taken into consideration by politically expedient environmental impact assessments (EIAs) (Nature Kenya, 2008). In a deal with Japan Carbon Finance worth Ksh 1.6 billion, Mumias Sugar has become the first company in Kenya to sell Carbon Emission Reduction (CER) Credits under the Kyoto Protocol's Clean Development Mechanism[118] (CDM) (Business Daily, 2010; GoK, 2010a). Subsidising large-scale expropriation of land under the Kyoto banner of 'Clean Development' undermines the capacity of pastoralists, who depend on these key resources areas in drought years, to adapt successfully to climate change. This irony represents a stark example of the non-articulation of international and national climate change policy with local impacts on marginalised communities. Many expect the areas where communities are under most pressure from biofuel land expropriation (the drylands) to be among the first to experience the effects of climate change (IIED, 2009; Oxfam, 2008).

Carbon markets and 'green' energy production are designed to mitigate climate related food insecurity and poverty in the future. Paradoxically, when these 'mitigation activities' cause food insecurity, poverty, and the unlocking of vast amounts of carbon in the present[119], there is clearly a case to be made for a standardised international process with which to assess the eligibility of renewable energy projects for the Kyoto Protocol's CDM. In the drylands, an alternative mitigation approach to subsidising 'biofuel land grabs', could be support for sustainable land use systems which enhance carbon sequestration (grasslands store approximately 34 percent of the global stock of CO_2) and support rural communities

[118] Under the Kyoto Protocol, both Joint Implementation (JI) and Clean Development Mechanism (CDM) projects, generate GHG Emission Reduction Units (ERUs) for the most developed nations through funding projects abroad.

[119] Conversion of grasslands to mono-cropping is a major source of emissions (Searchinger *et al.* 2008), which typically results in loss of 95 percent and 60 percent of above and below-ground carbon respectively (Reid *et al.* 2004; Guo & Gifford, 2000).

(Mortimore *et al.* 2009).

8.6 Adaptations, Innovations and Trends

This thesis has attempted to develop a structured examination of the principle livelihood constraints faced by Orma pastoralists, as perceived by the respondents themselves. The data presented on Orma mobility, service availability and appropriateness, and land expropriation, contributes valuable knowledge on the dynamics of Orma livelihoods in the context of an acute dearth of reliable data (Oxfam, 2009). Situating livelihood constraints, adaptations and innovations, in broader national and international processes, has highlighted the growing problem of scale in effectively addressing local constraints. As national and international market forces and policies manifest more tangibly in Orma lives, there has been a shift in livelihood strategies away from investment in what Newman and Dale (2005) refer to as 'bonding capital' (building group cohesion), to a greater focus on establishing 'bridging capital' which facilitates access to external systems and networks. Such networks are accessed in a variety of ways. For the Orma, investment in education and the development of rural-urban linkages offers the principle pathways to access and exploit new social networks as part of a 'stepping out' strategy. This societal transition resonates with parallel work in social systems theory (Luhmann, 1984), which describes the societal tendency towards increasing reliance on systems and decreasing investment in group cohesion as society 'develops'. In the Orma context, this societal 'development' can be understood as the process of social differentiation in response to the increasing influence of the market and global forces.

As has been emphasised throughout this thesis, utilising mobility to access scattered and transient resources over large spatial scales is an effective way of reducing risk and enhancing productivity in the drylands. Unencumbered movement and access to key resource areas is vital in preserving assets above critical thresholds in especially dry years. Acceptance of this premise necessitates a commitment to landscape level and cross-boundary resource access institutions, and models of service delivery

which can accommodate household mobility. Investments in transport and communication infrastructures can facilitate more equitable engagement with the market by reducing transaction costs and asymmetrical market information. These policies will facilitate pastoral communities' ability to adapt to and even benefit from increasing and more extreme climatic variability.

8.7 Summation

The data presented in this thesis has illuminated important aspects of Orma livelihoods, about which extremely limited data was available. Data concerning Orma utilisation of public services and their role in livelihood strategies, have the potential to inform national processes such as the on-going process of government decentralisation, which may facilitate more locally autonomous adaptation of service provision. Incorporation of data on Orma educational trends and innovations into the drafting of the nomadic education policy in Kenya has the potential to strengthen the empirical basis for country-wide reforms which often neglect the contextual specificities of smaller ethnic groups.

The 'governance of change' will be an important theme in climate change adaptation in African drylands, because change is rarely neutral, political change in particular must be negotiated. If the inevitable process of change is to be equitable, new forms of institutional governance which embrace landscape level planning and incorporate local institutions are required. The success or failure of government and local communities to cooperate in forging appropriate institutional structures at scales adequate to manage drylands resources will determine if opportunities presented by climate change and other global processes can be seized or are squandered.

If significant progress is to be made towards the achievement of the Millennium Development Goals, addressing poverty and education in the drylands is critical. The drylands have a global significance due to the large number of people dependent on them, and because of our increasing understanding of their interaction with global

climatic and economic systems. The role of dryland communities (particularly pastoralists) in supplying the projected explosion in demand for livestock products (Delgado, 1999) and its potential to alleviate poverty in the drylands, will depend on the ability of policy-makers to design, and effectively implement policies that support dryland communities. This can only be achieved with improved understanding of dryland livelihoods, and financial support from the international community, in recognition of the wider significance of the world's drylands.

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